

airhockey

Brunswick



Brunswick  
CORPORATION

# SERVICE MANUAL



BRUNSWICK

SEPTEMBER, 1972



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BRUNSWICK CORPORATION  
AIR HOCKEY TABLE WARRANTY POLICY

BRUNSWICK CORPORATION hereby warrants the AIR HOCKEY TABLE to be manufactured to the highest standards of material and workmanship. BRUNSWICK CORPORATION further warrants that your new table will be free from defects in material and workmanship for a period of 90 days from the date of purchase.

Should any defect in material or workmanship appear during such warranty period, the defective part will be repaired or replaced, at BRUNSWICK'S option, at no charge.

This warranty does not include pucks, goalies and lamps; nor does this warranty include damage due to vandalism.

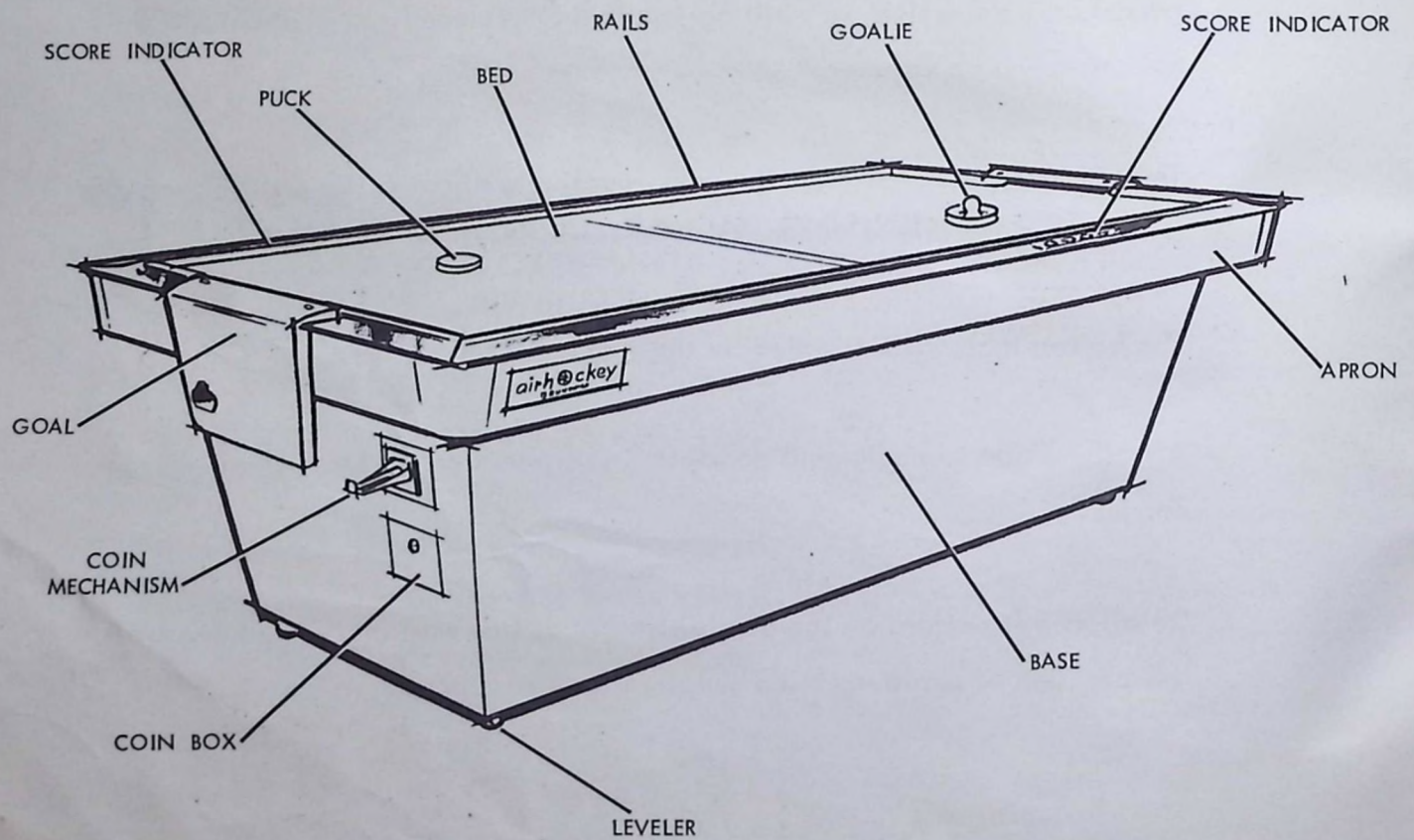
The blower motor is warranted by the motor manufacturer.

All claims due to equipment damaged in shipment are to be settled with the carrier.

Detailed instructions on the administration of this warranty are included with the package of warranty forms supplied to each Distributor.



# NOMENCLATURE





## PACKAGE INFORMATION

### PACKAGE "A" CONTENTS:

BED, APRON AND RAIL ASSEMBLY

O.D. SIZE -  $103\frac{1}{2} \times 55\frac{1}{2} \times 7\frac{1}{4}$   
WEIGHT - 275#

### PACKAGE "B" CONTENTS:

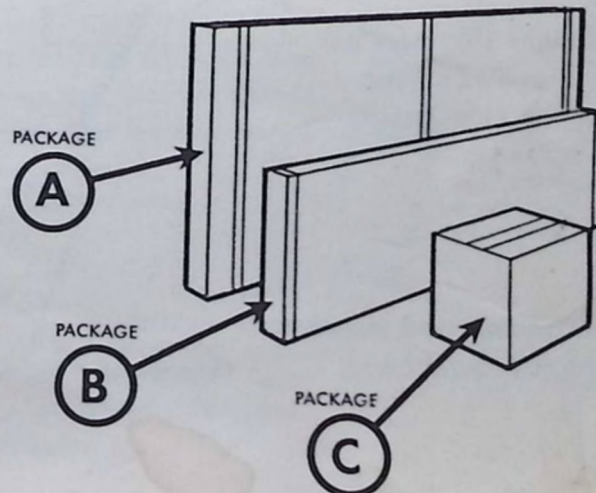
BASE PANEL ASSEMBLY, SIDE PANEL-R. H., SIDE PANEL-L.H., END  
PANEL-COIN BOX END AND REMOVABLE END PANEL

O.D. SIZE -  $89\frac{1}{2} \times 6 \times 30$   
WEIGHT - 170#

### PACKAGE "C" CONTENTS:

GOAL COVER AND BACKING ASSEMBLY, GOAL TRACK ASSEMBLY,  
BLOWER FAN HOUSING, BLOWER, COIN MECHANISM HOUSING,  
COIN MECHANISM DOOR, COIN BOX, PACKAGE (2) MALLETS,  
PACKAGE (3) HOCKEY PUCKS, HARDWARE, COIN BOX, GASKET SEAL  
FOR BLOWER, DUST FILTER AND SERVICE MANUAL

O.D. SIZE -  $23\frac{1}{8} \times 19\frac{1}{4} \times 18\frac{5}{8}$   
WEIGHT - 65#





# ASSEMBLY INSTRUCTIONS

## BASE FRAME COMPONENTS

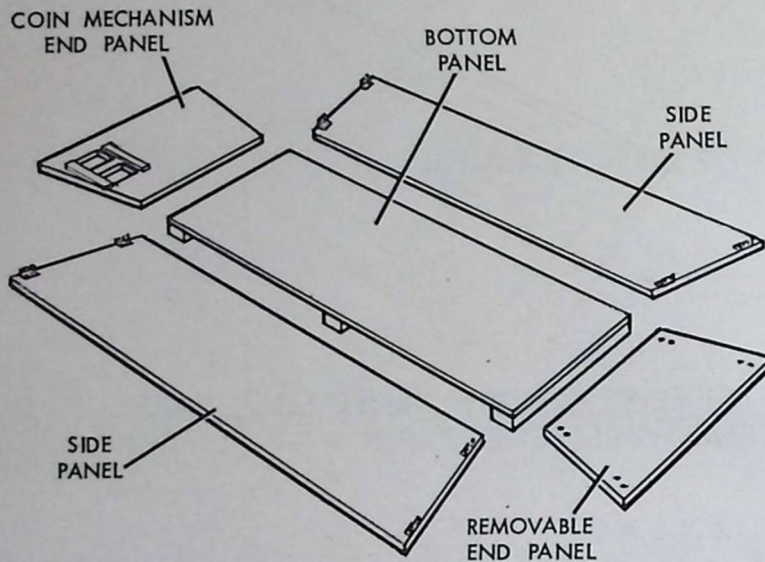


FIGURE 1

1. Figure 1 shows the base frame panels that are to be assembled.

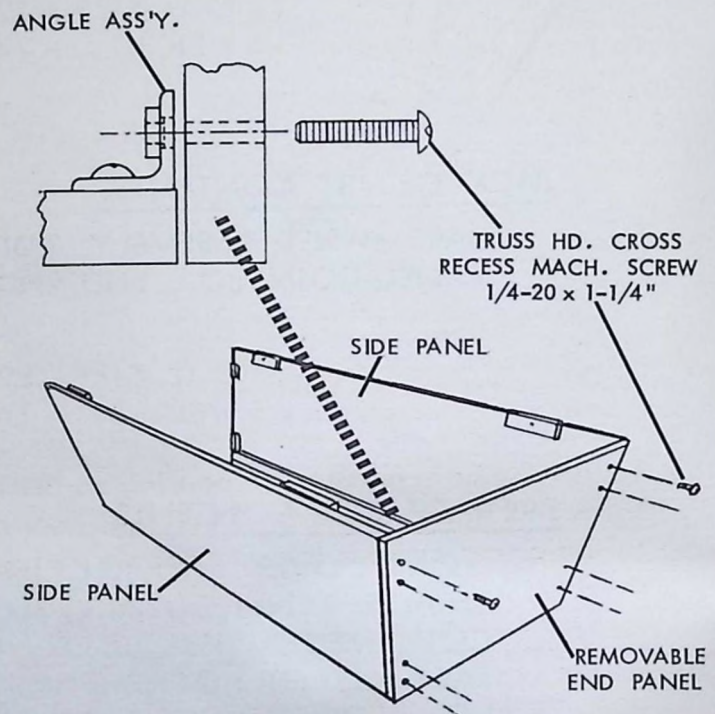


FIGURE 2

2. Assemble the removable end panel to the two (2) side panels. (Figure 2)
3. The removable end panel has eight (8) holes all the way through for machine screws, and the brackets on the correct end of the side panels are threaded for the machine screws.
4. Attach the remaining coin mechanism end panel to the side panels, using eight (8) round head self-tapping screws. (Figure 3)

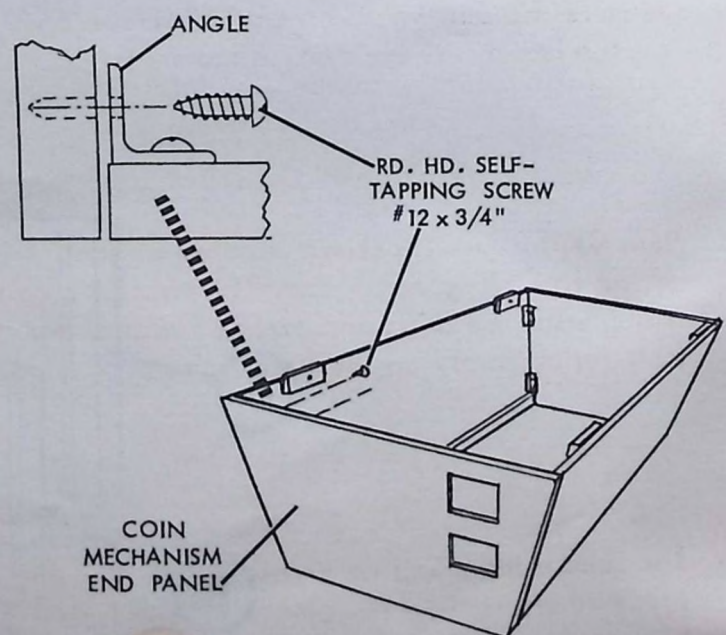


FIGURE 3



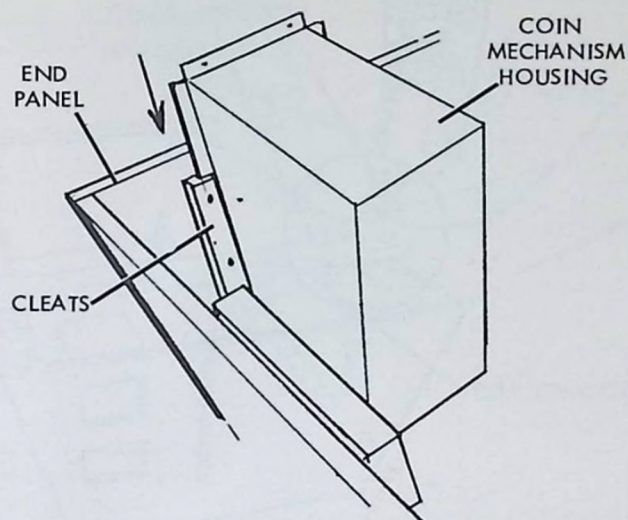


FIGURE 4

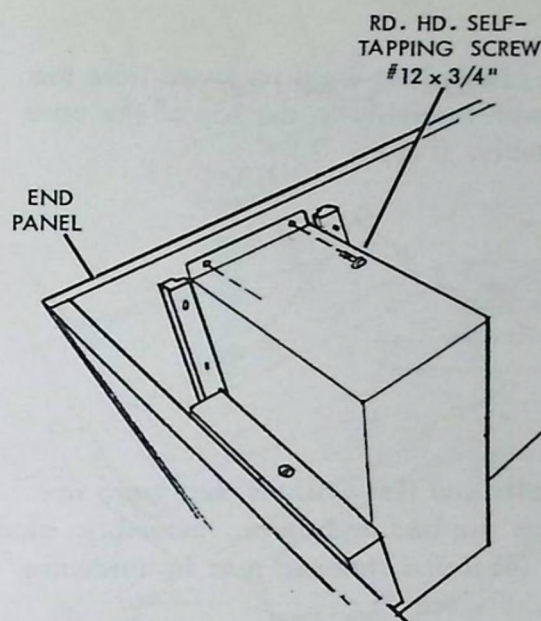
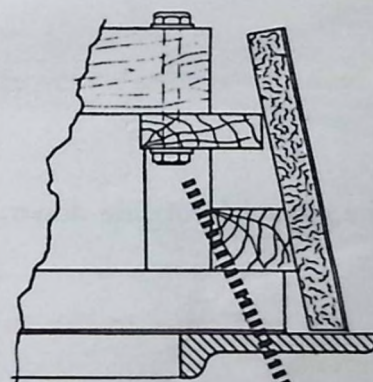


FIGURE 5

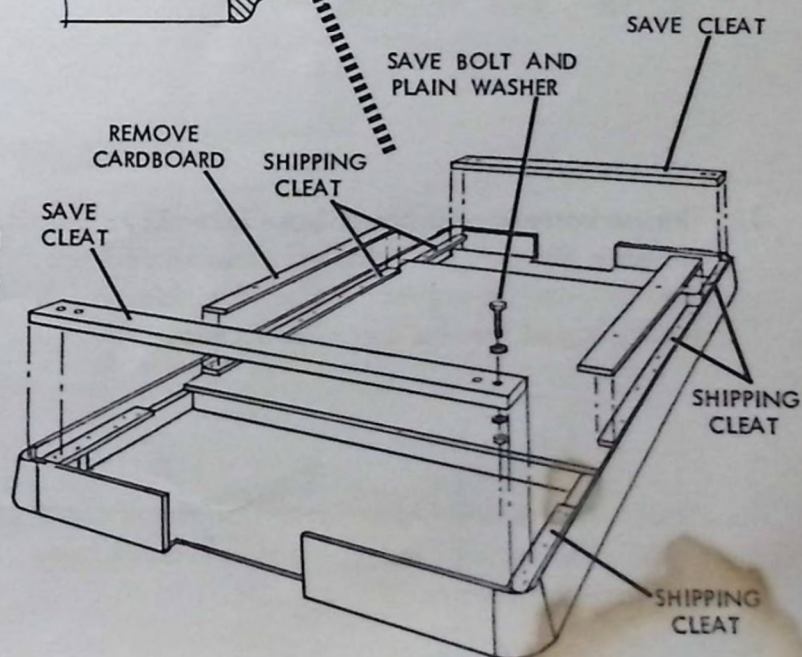
5. Install the coin mechanism housing on the base frame. (Figures 4 and 5) Slide the housing into the cleats provided, and attach with hardware shown.

#### BED AND APRON ASSEMBLY

6. Open the bed and apron assembly carton, and remove the cardboard on each side centered on the bottom of the bed. (Figure 6)



7. Remove the two (2) cleats located at each end of the bed. (Figure 6) Save the two (2) cleats along with the bolts and one flat washer per bolt for assembly on the base frame.



8. The remaining shipping cleats can be left in place to strengthen the aprons on any future movement of the table. (Figure 6)

FIGURE 6



# ASSEMBLY INSTRUCTIONS

## BASE FRAME COMPONENTS

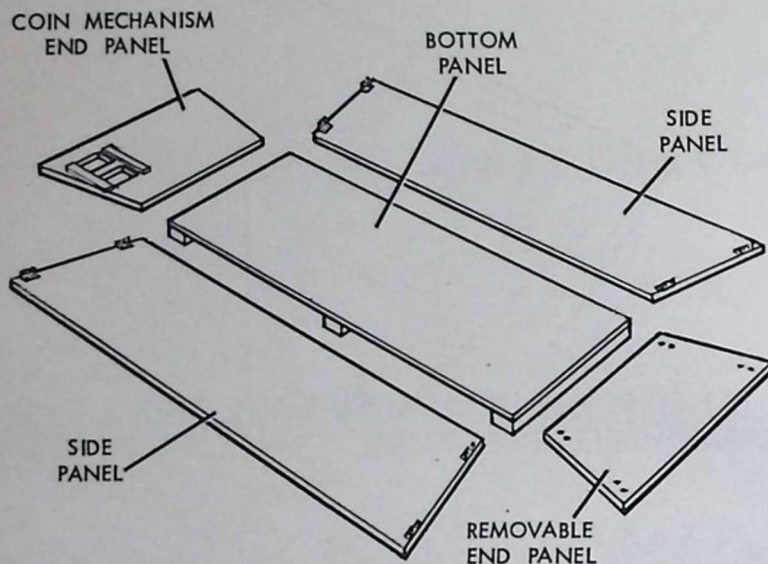


FIGURE 1

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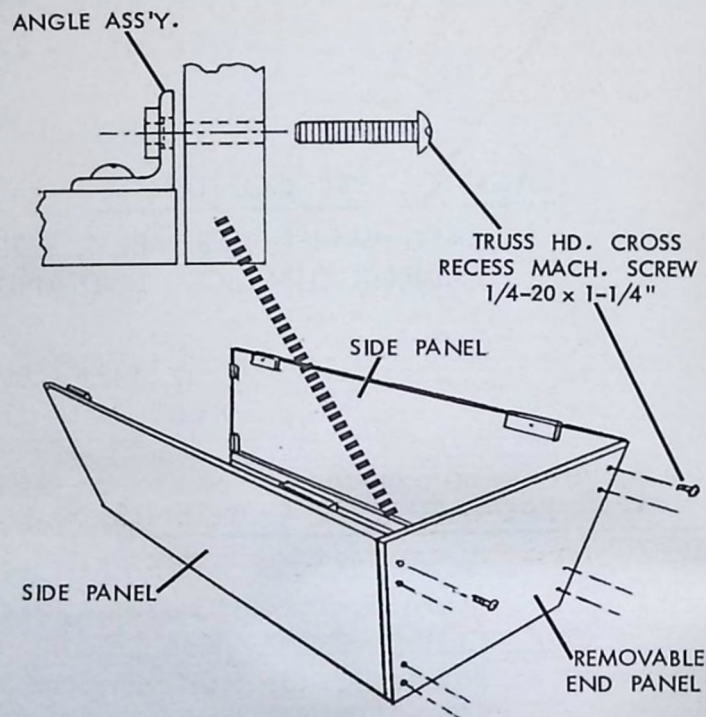


FIGURE 2

2. Assemble the removable end panel to the two (2) side panels. (Figure 2)
3. The removable end panel has eight (8) holes all the way through for machine screws, and the brackets on the correct end of the side panels are threaded for the machine screws.
4. Attach the remaining coin mechanism end panel to the side panels, using eight (8) round head self-tapping screws. (Figure 3)

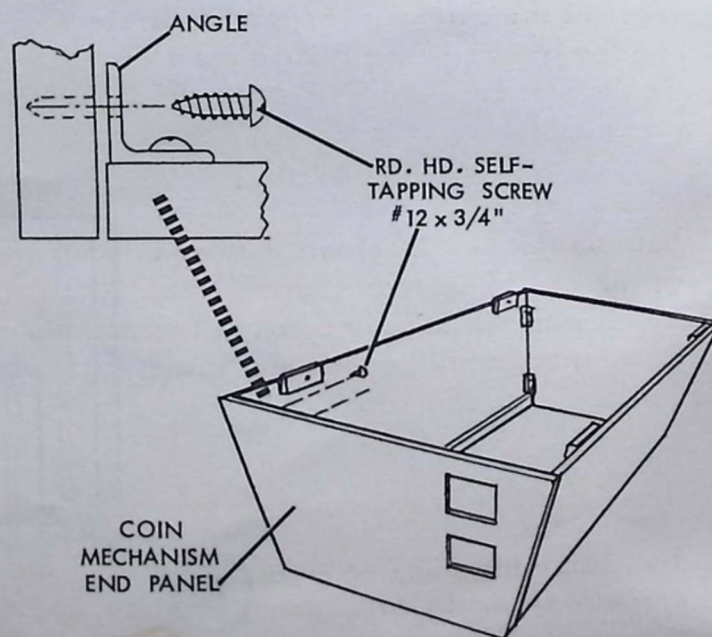


FIGURE 3



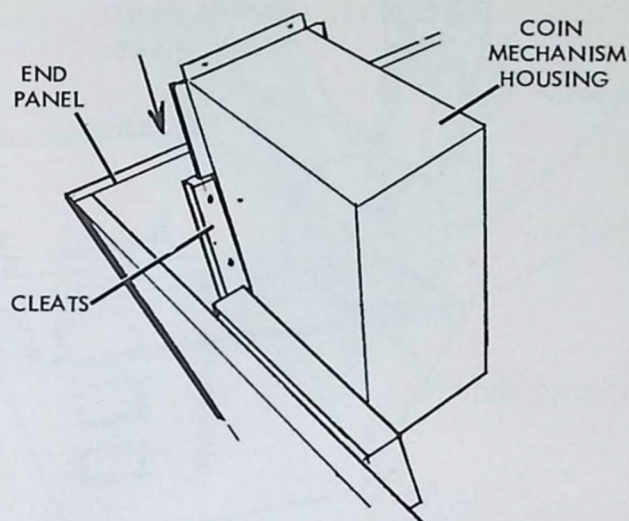


FIGURE 4

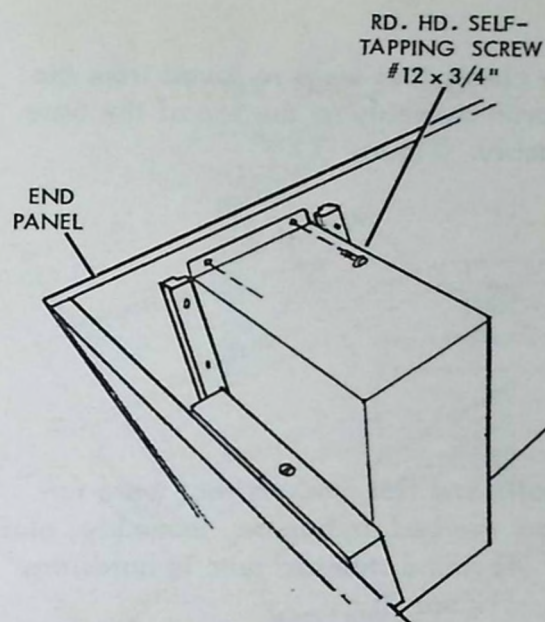


FIGURE 5

5. Install the coin mechanism housing on the base frame. (Figures 4 and 5) Slide the housing into the cleats provided, and attach with hardware shown.

6. Open the bed and apron assembly carton, and remove the cardboard on each side centered on the bottom of the bed. (Figure 6)

7. Remove the two (2) cleats located at each end of the bed. (Figure 6) Save the two (2) cleats along with the bolts and one flat washer per bolt for assembly on the base frame.

8. The remaining shipping cleats can be left in place to strengthen the aprons on any future movement of the table. (Figure 6)

#### BED AND APRON ASSEMBLY

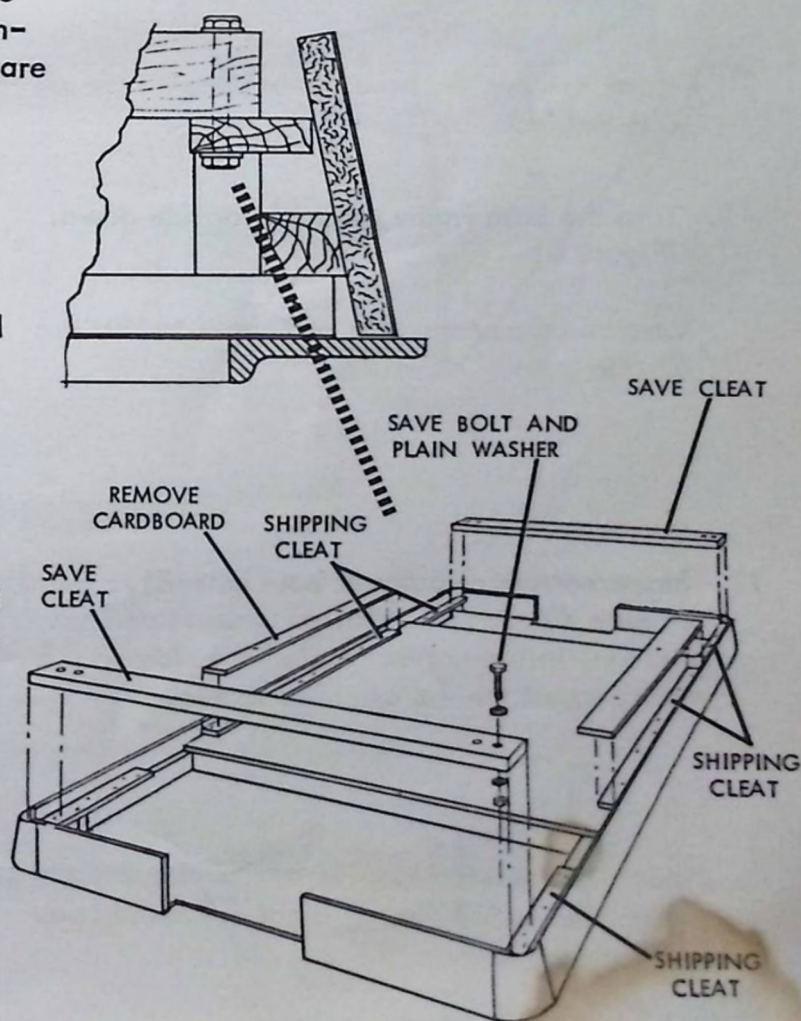


FIGURE 6



9. Attach the cleats that were removed from the bed and apron assembly to the top of the base frame assembly. (Figure 7)

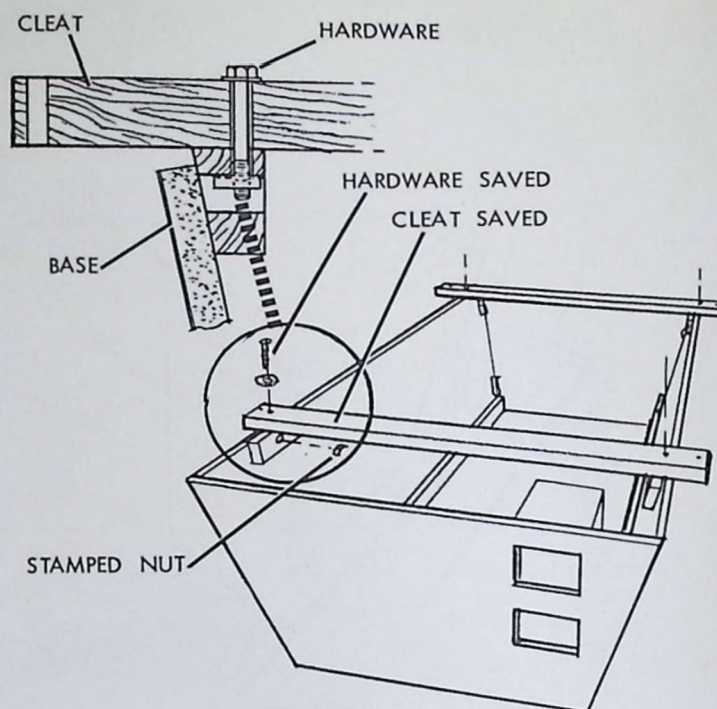


FIGURE 7

10. Use the bolts and flat washers that were removed from the bed and apron assembly, along with four (4) round stamped nuts in hardware package. (Figure 7)

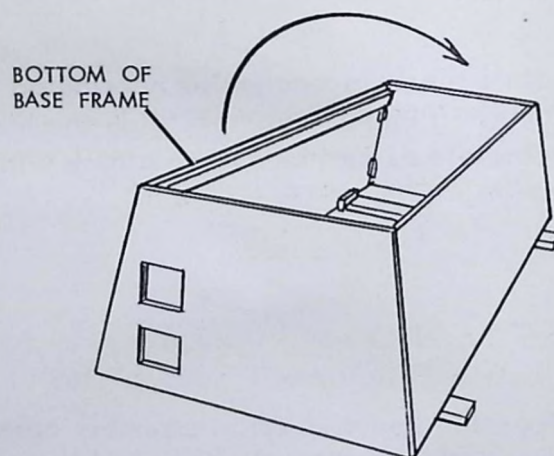


FIGURE 8

11. Turn the base frame assembly upside down. (Figure 8)

12. Place bottom panel over base assembly. (Figure 9)

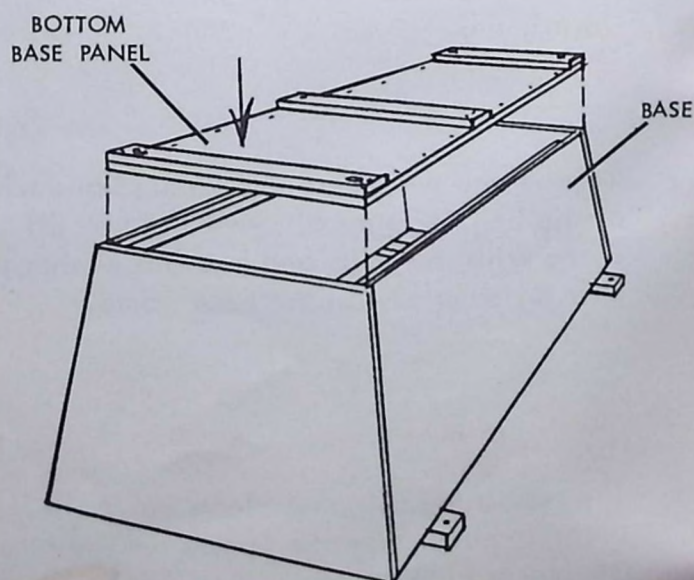


FIGURE 9



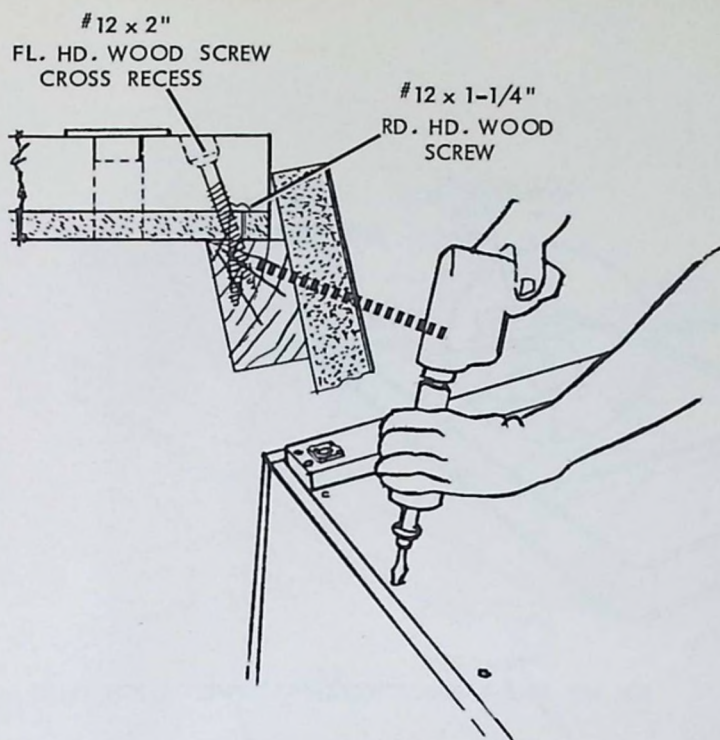


FIGURE 10

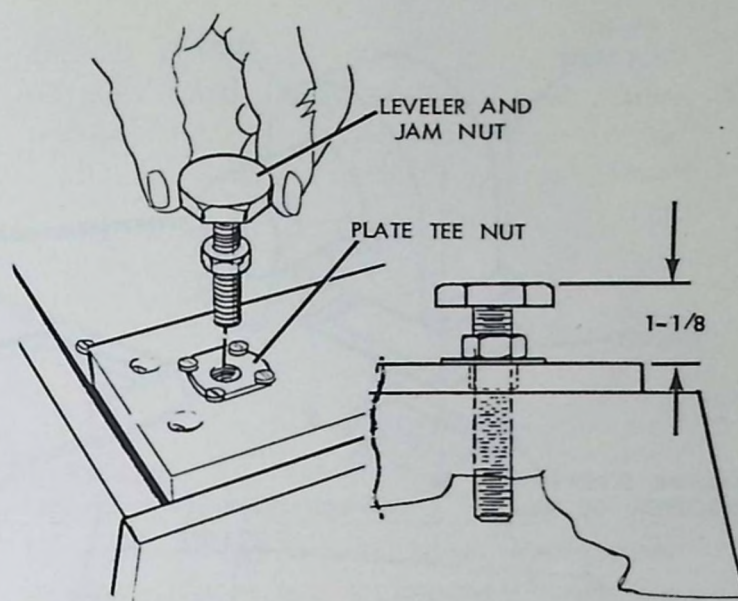


FIGURE 11

13. With bottom base panel in place, attach using the #12 x 2" wood screws at each wood cleat on the bottom panel. (Figure 10)
14. Use the #12 x 1-1/4" wood screws at each hole location in between the wood cleats. (Figure 10)
15. Install the levelers and jam nuts at each corner. (Figure 11)
16. Set the levelers and jam nuts to the dimension shown. (Figure 11)
17. With the levelers installed (Figure 12), turn the completed base assembly right side up. (Figure 13)

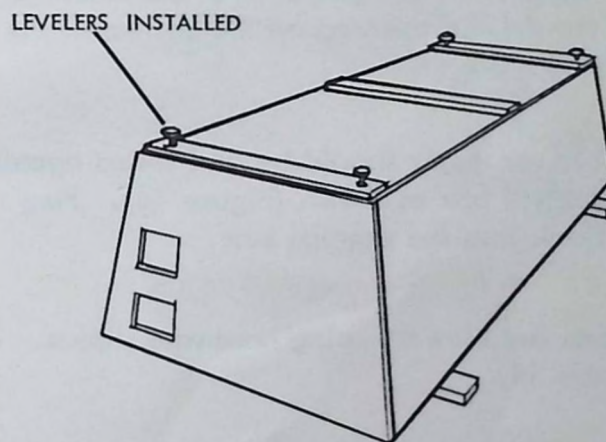


FIGURE 12

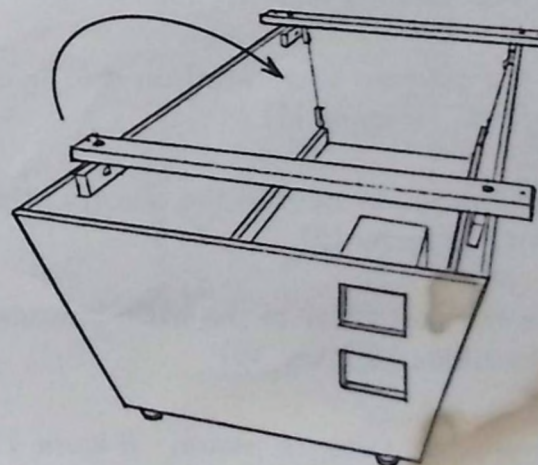


FIGURE 13



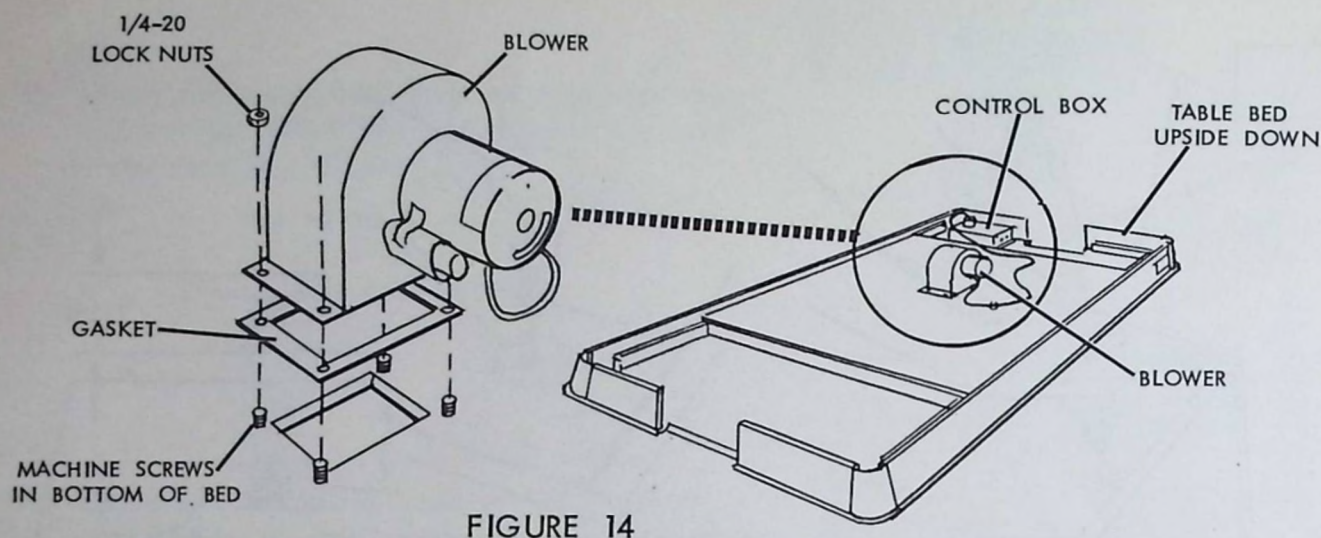


FIGURE 14

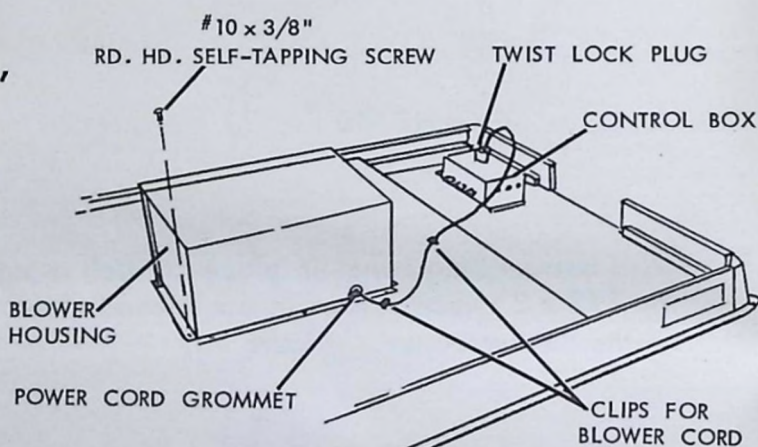


FIGURE 15

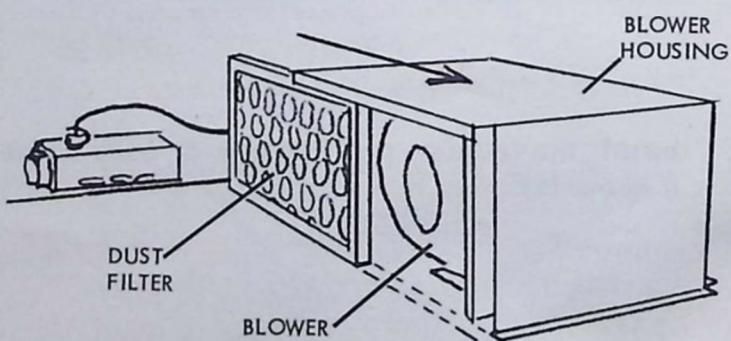


FIGURE 16

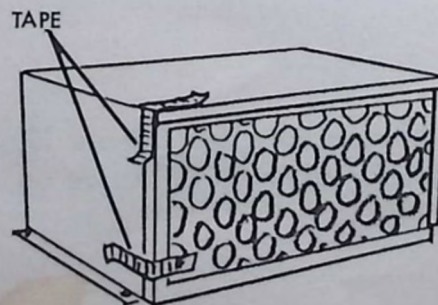


FIGURE 17

18. Before turning the bed and apron assembly over, install the blower. (Figure 14)
19. Set the blower and gasket over the studs that are around the opening on the bottom of the bed. (Figure 14)
20. The blower motor should be positioned opposite the control box as shown (Figure 14). Plug the twistlock into the control box.
21. Attach the blower, using hardware shown. (Figure 14)
22. With the blower attached, install the blower housing. (Figure 15) Make sure the cut-out for the power cord grommet is as shown in Figure 15. Attach, using the #10 x 3/8" round head self-tapping screws.
23. Cut the grommet and install on cord in opening provided. (Figure 15)
24. Insert the power cord in the two (2) clips shown. (Figure 15)
25. Slide the dust filter in the track provided in the housing. (Figure 16)
26. Tape the dust filter in place. (Figure 17) This will keep it in place during any movement of the bed assembly.



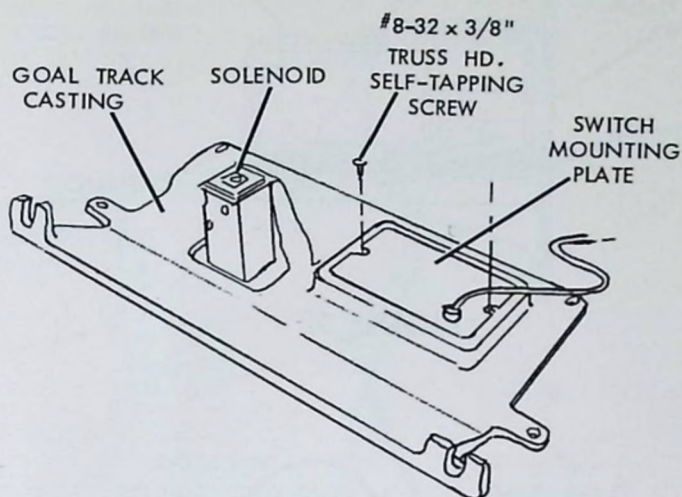


FIGURE 18

27. Before turning the bed assembly over, the goal assemblies at each end of the table should be installed.

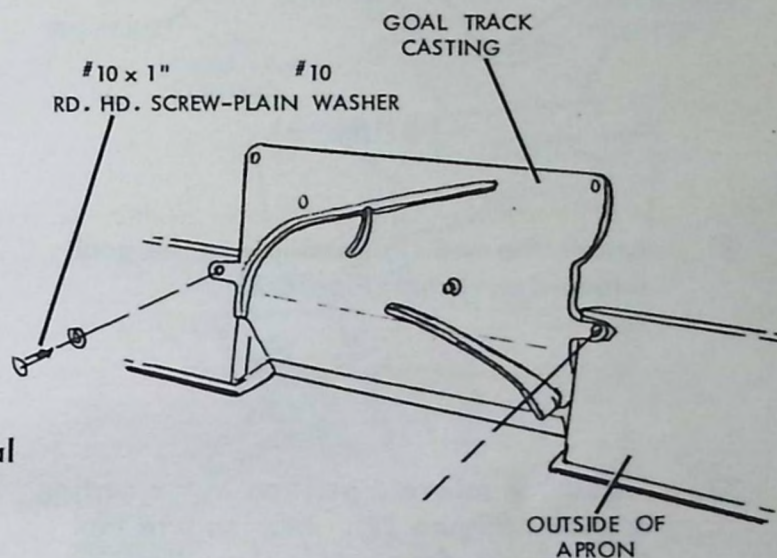


FIGURE 19

28. The switch and mounting plate taped to the underside of the bed should be attached to the goal casting as shown in (Figure 18).

29. Place the goal casting in the apron opening and attach the two (2) casting tabs to the outside of the aprons, as shown. (Figure 19)

30. Attach the two (2) open flange tabs of the goal casting to the bottom of the bed, using hardware shown. (Figure 20)

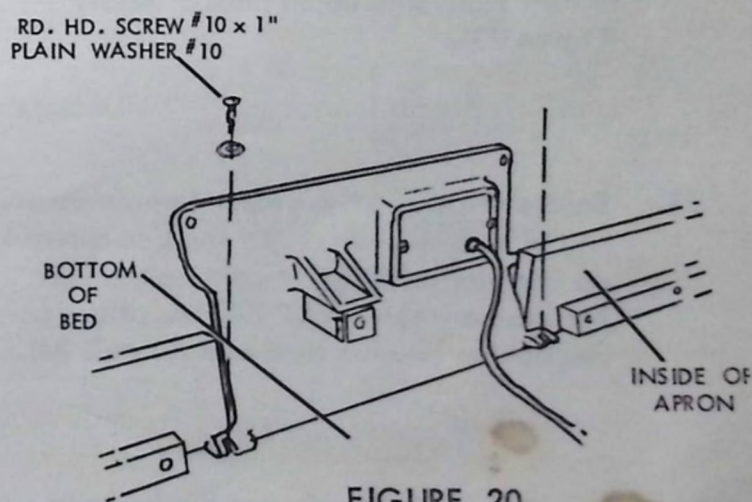


FIGURE 20



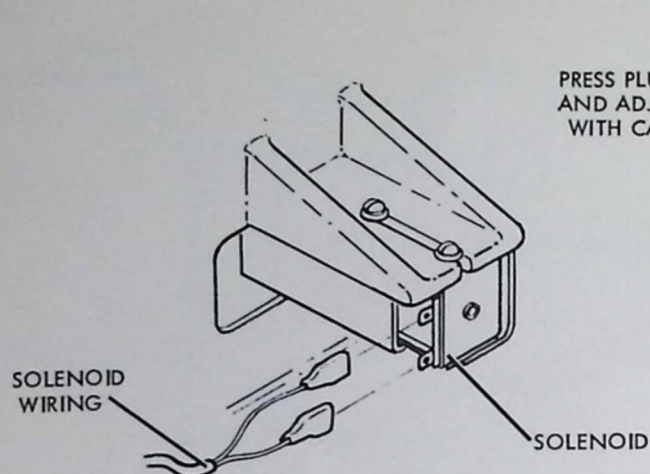


FIGURE 21

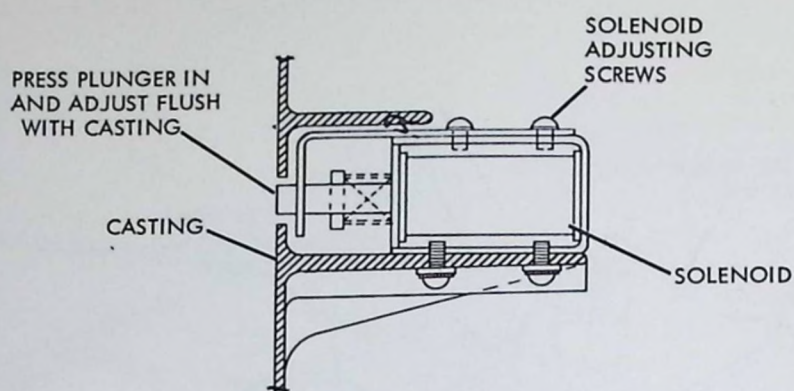


FIGURE 22

31. Attach the two (2) terminals to the goal solenoid as shown (Figure 21).
32. Adjust the solenoid position in the casting as shown (Figure 22). Making sure that the solenoid plunger is bottomed and set flush with casting, tighten in place.

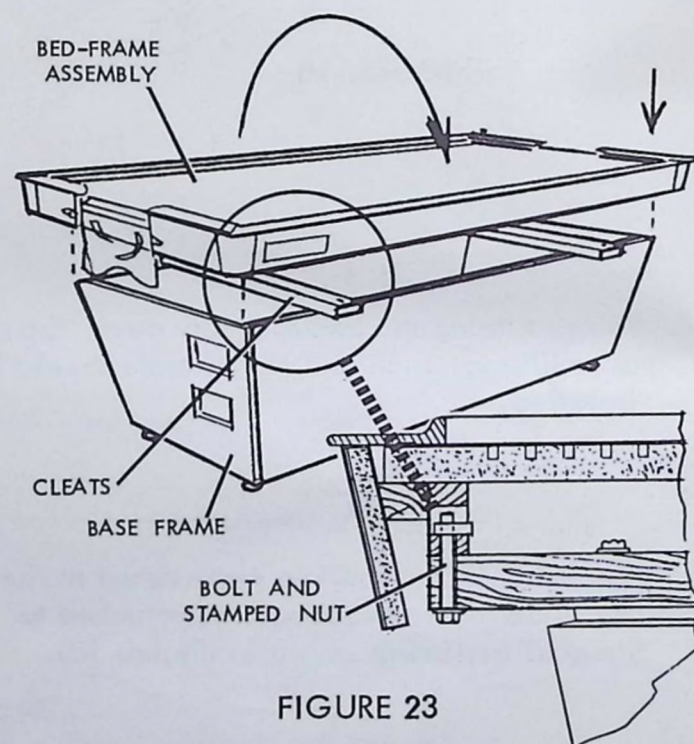


FIGURE 23

33. The bed and apron assembly is now ready to turn right side up on base assembly (Figure 23).
34. Before attaching the bed and apron assembly to the base assembly, lift the bed assembly up in order to plug the coin mechanism harness connector into the side of the coin mechanism housing as shown (Figure 24).

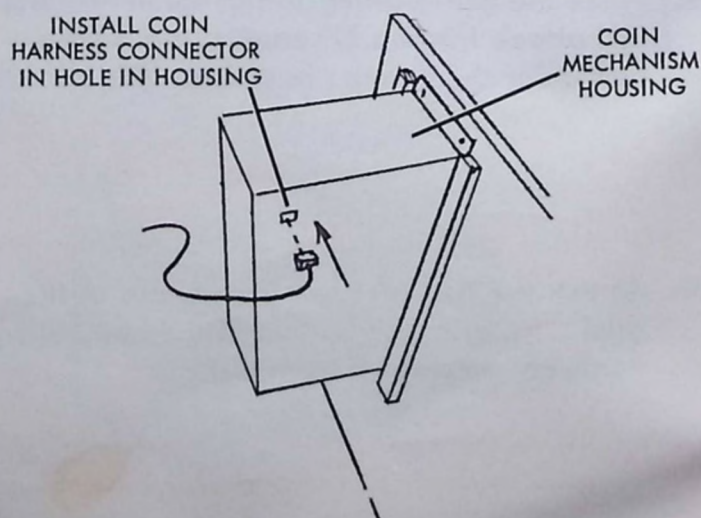


FIGURE 24

35. Complete the attaching of the bed and apron assembly to the base frame as shown (Figure 22).



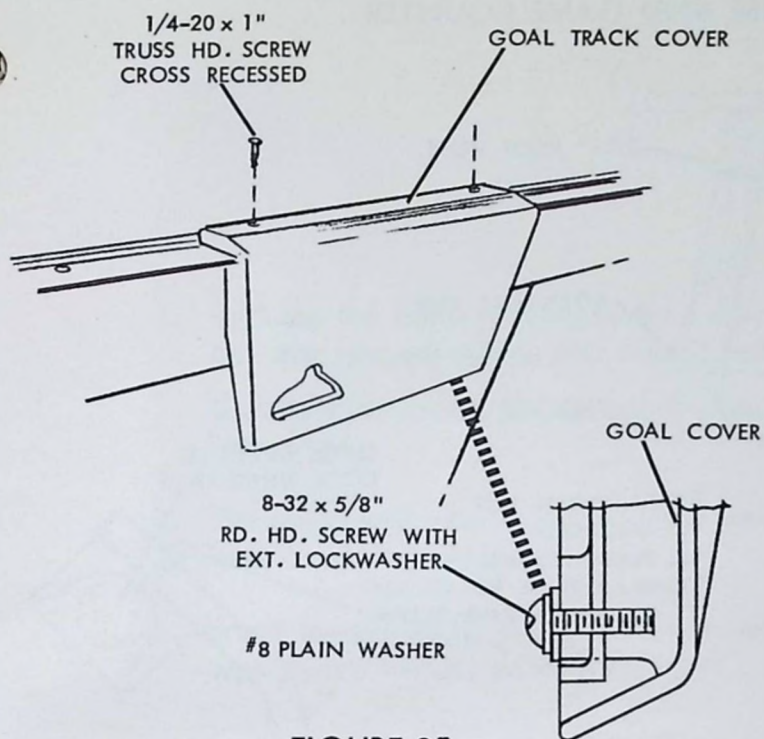


FIGURE 25

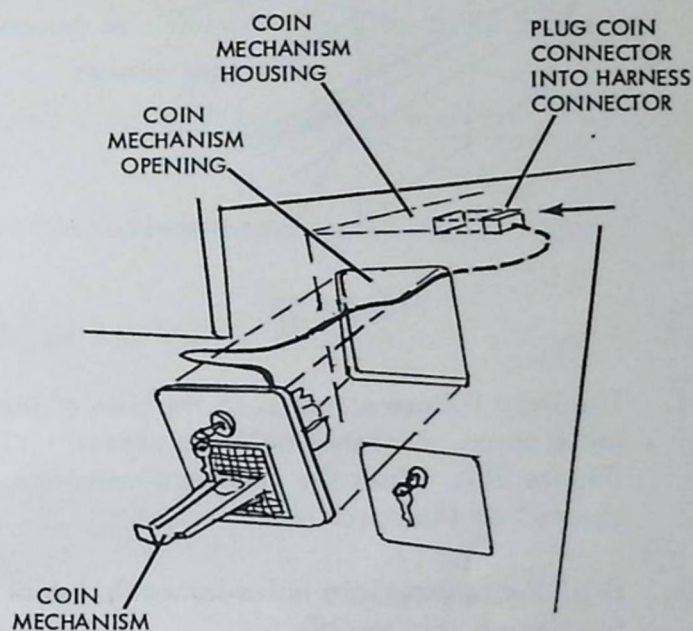


FIGURE 26

36. Install the goal covers with hardware shown (Figure 25). Hardware at the top lower corners.
37. Plug the coin mechanism wiring connector into the connector located inside the coin mechanism housing (Figure 26). Place coin mechanism into opening and lock in place.
38. Place the coin box into opening provided and install locked cover (Figure 27).
39. Move table into final position, level, plug in service cord and play hockey.

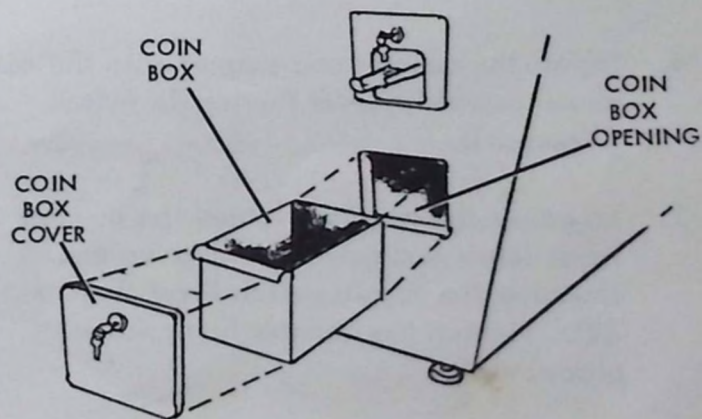


FIGURE 27



# INSTALLATION - OPTIONAL EQUIPMENT AIR HOCKEY - LIGHT FIXTURE AND GAME COUNTER

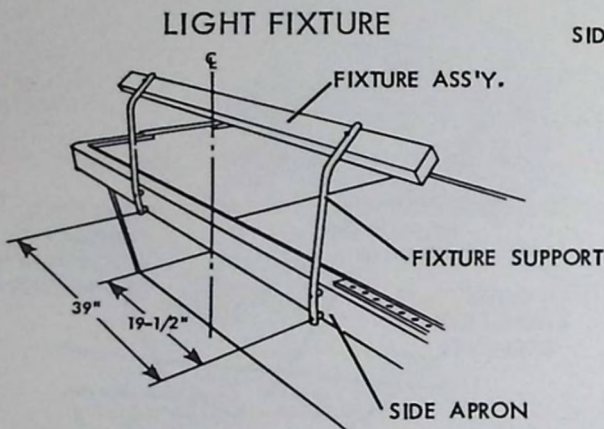


FIGURE 28

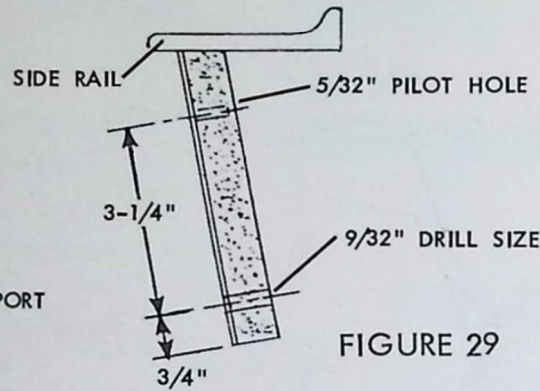


FIGURE 29

1. The light fixture attaches to the side of the table apron, centered on table center (Figure 28). Mark the two (2) dimensions squared on the apron side.
2. Drill the appropriate holes for each leg of the fixture (Figure 29).
3. Assemble the two (2) legs to the light fixture using hardware shown (Figure 30). Then install the legs to the apron using hardware shown.

#10-24 ACORN NUT  
#10 LOCKWASHER  
#10 PLAIN WASHER  
#10-24 x 1 TRUSS HD. CR. REC. MACHINE SCREW

1/4-14 x 2" OVAL HD. PHILLIPS TYPE A-B SCREW  
SPACER

1/4-20 x 2-1/2" OVAL HD. CR. REC. MACHINE SCREW  
SPACER  
PLAIN WASHER  
1/4" LOCKWASHER  
1/4-20 HEX NUT

BLACK LIGHT OR COOL WHITE LAMP

FIGURE 30

4. Install the counter and support onto the coin chute assembly, over the toggle switch (Figure 31).
5. To adjust the counter, loosen the counter lever screw and move the lever up and touching the toggle switch lever (Figure 32). Tighten the counter lever screw in place.

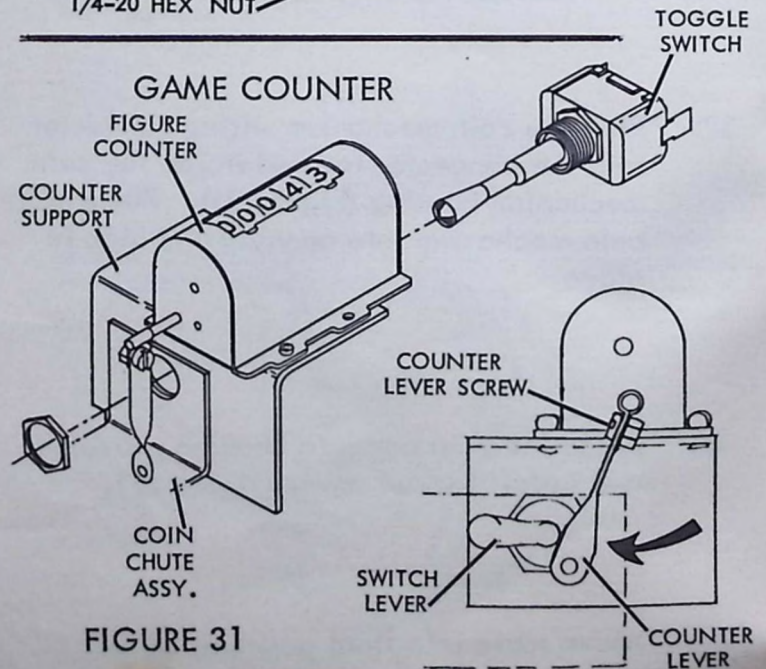


FIGURE 31

FIGURE 32



## GENERAL MAINTENANCE

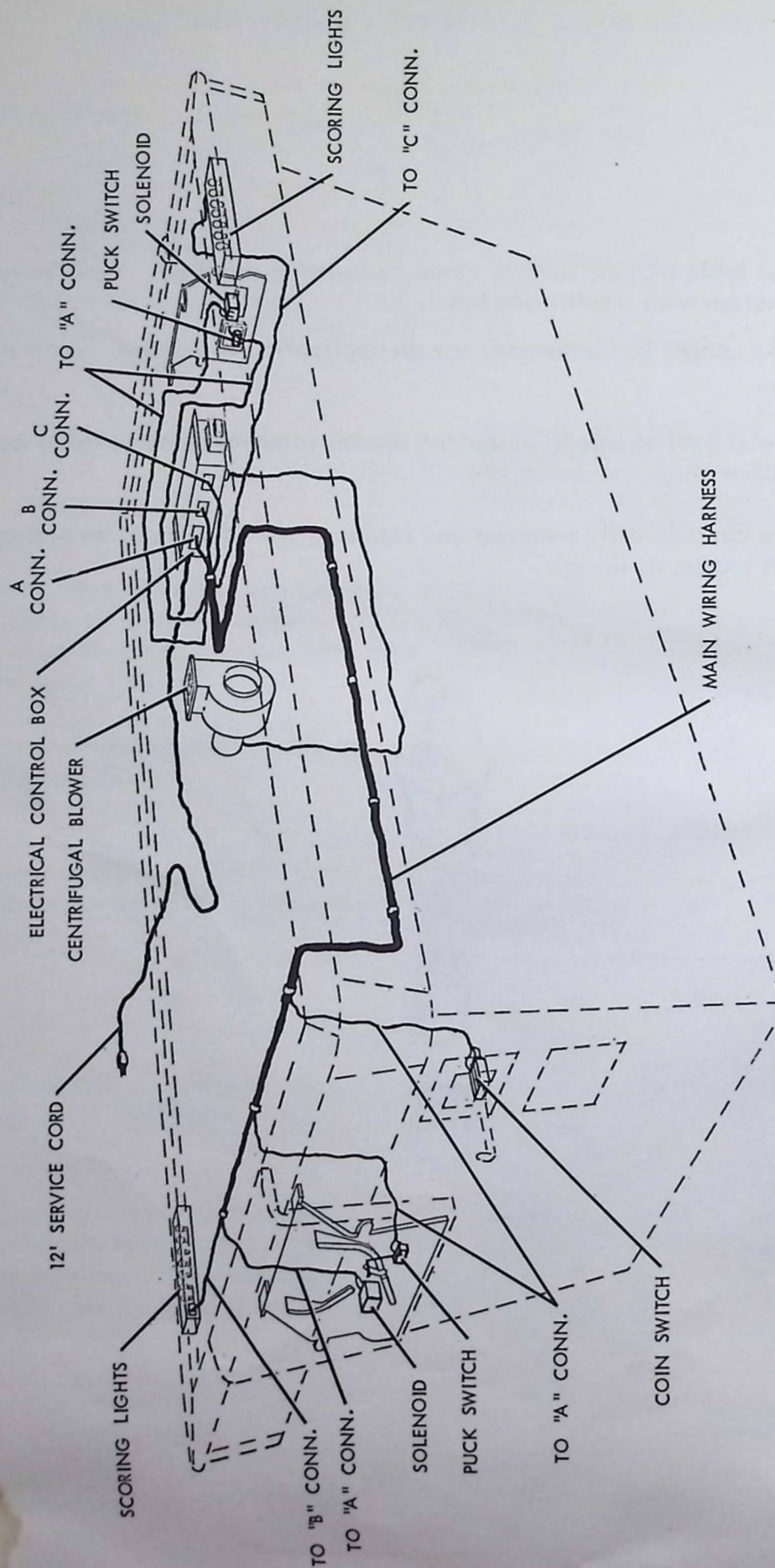
1. To keep the table playing surface clean, vacuum as required. Turn the table blower on, and vacuum with a soft brush head.

If soil marks cannot be vacuumed, use an application of Windex, also with the blower on.

2. The pucks and goalies should be sanded smooth whenever they develop ragged edges from excessive play.
3. Score lamps can be easily removed and replaced with the use of an ordinary slip-on type pencil eraser, as shown.







ELECTRICAL - PICTORIAL  
AIR HOCKEY



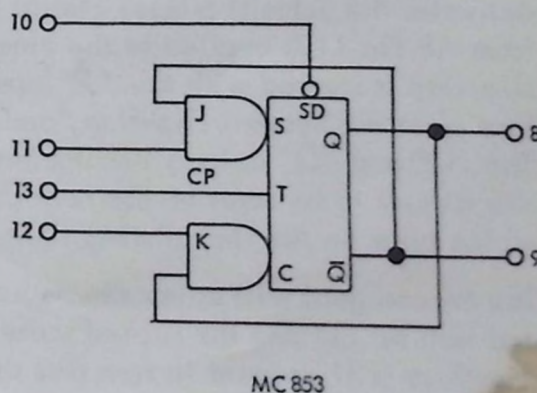
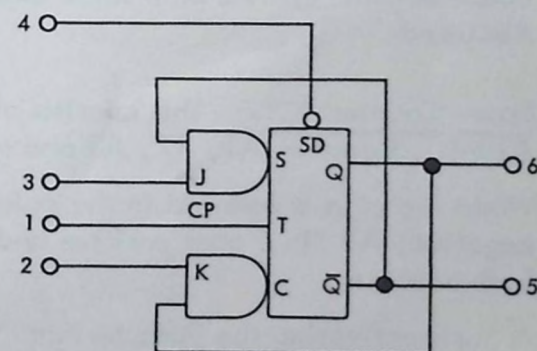
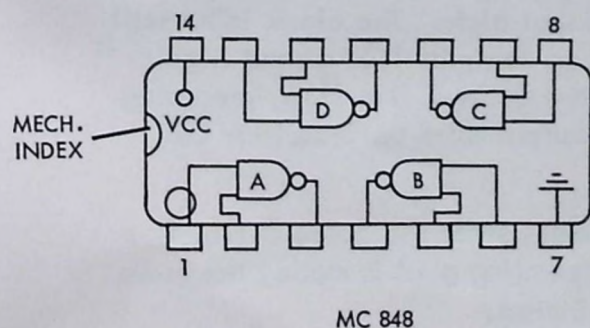
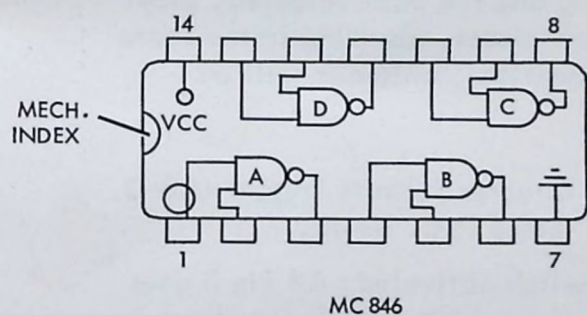
## AIR HOCKEY - THEORY OF OPERATION

General. The electronic controls for the Brunswick Air Hockey game are contained on a replaceable printed circuit control board that is connected by cables to the scoring lights, power supply, centrifugal blower, puck switches and coin switch.

Circuits on the control board reset the scoring counter and initiate the controls to turn on the centrifugal blower, release the puck and enable the puck switches and score counting circuits.

The score counting circuits record goals and turn on the scoring lights sequentially until one score reaches a count of seven (7). At this time, the control circuits are reset, which turns off the blower, energizes the "Stop Puck" solenoid and disables the puck switches. The score lights remain on for twenty seconds and are then turned off in preparation for the next game.

Contained on the control board is a power supply to provide +5V to the integrated circuits and transistor circuitry, and power control circuits to control the centrifugal blower motor and "Stop Puck" solenoids.





Detailed. The controls for the Brunswick Air Hockey Game can be divided into three (3) parts: turn-on controls, counting controls and turn-off controls. The controls will be discussed in that order:

Turn-On Control. These controls are comprised of coin switch, A10-A, A10-B, Q2, A-11, Q3, Q20. Prior to the insertion of a quarter (25¢) in the coin slot, A10 Pin 3 is low (-0V) and A10 Pin 6 is high (+ 5V).

The output A10 Pin 3 holds the counting controls (A10-D, A8-D, A10-C, A8-C) in a disabled condition. The output of A10 Pin 6 holds Q2 off, disabling the blower motor and de-energizing the "Stop Puck" solenoid.

As the quarter is inserted in the coin mechanism and the coin switch activated, Capacitor C9 discharges through R24. As the coin switch returns to the NC position, Pin 1 of A10 goes low, setting the flip-flop comprised of A10-A and A10-B. The output of A10 Pin 3 being high enables the counting circuits. A10 Pin 6 being low turns on Q2 which turns on the Opto-isolator (Photocouple) A11 and Transistor Q20.

As the photo-transistor in the Opto-isolator A11 conducts, gate bias is applied to Triac Q3, Q3 conducts and power is applied to the blower motor. Q20 conducting applies power to the two (2) "Stop Puck" solenoids, which releases the puck into the return slot of the goal.

The output of A10 Pin 6 is also fed to A9 Pin 1 causing the output at A9 Pin 3 to go high. This action starts a time delay circuit (approximately eight to ten minutes) composed of R17, C8 and Q5. This circuit will terminate the game after the time delay, if the required seven goals have not been made by one of the players.

With the counting circuits enabled, the blower motor on, and the puck released, play is ready to begin. As each goal is made, the puck switch closes, resulting in the score count advancing. As both score counting sections are identical, only one will be discussed.

Score Counter "C". This consists of Puck Switch "C", Counter Schmitt Trigger (A8-D, A10-D), Counter (A1, A2, A3 and half of A4), and "C" Lamp P.C. Board.

When the coin is inserted in the coin slot and the coin switch activated, A8 Pin 3 goes negative, A9 Pin 6 goes positive and A8 Pin 4 goes negative which sets all flip-flops in both counters.

A puck activating the Puck Switch "C" places a momentary low at A10 Pin 13. This activates the Schmitt trigger circuit A10-D, A8-D. The resultant negative going pulse from A8 Pin 11 is applied to the clock inputs of the counter flip-flops. The Score 1 flip-flop is steered with the "J" input low and the "K" input high. The clock input will thus reset the Score 1 flip-flop, and its "Q" output will go low, its " $\bar{Q}$ " output high. The "Q" and " $\bar{Q}$ " outputs become the steering inputs to the Score 2 flip-flop, preparing this circuit to be reset on the next goal. Also the "Q" output turns on Transistor Q6, which turns on the first scoring light.

The second goal will cause the Score 2 flip-flop to be reset, steer the Score 3 flip-flop and turn on Q7 and the second score light. As each succeeding goal is made, the score flip-flops will be reset in turn and the score lights illuminated.

Turn-Off Control. When the seventh goal is made and the Score 7 flip-flop resets, Pin 6 of A4 and the input to A9 Pin 12 will go low. On A9, Pin 11 will go high and Pin 8 will go low. This low from A9 Pin 8 is fed to A10 Pin 6, resetting the start flip-flop.

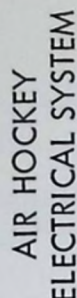


The start flip-flop being reset will disable the counter Schmitt triggers, will turn off the blower motor and energize the "Stop Puck" solenoids, thus terminating the game.

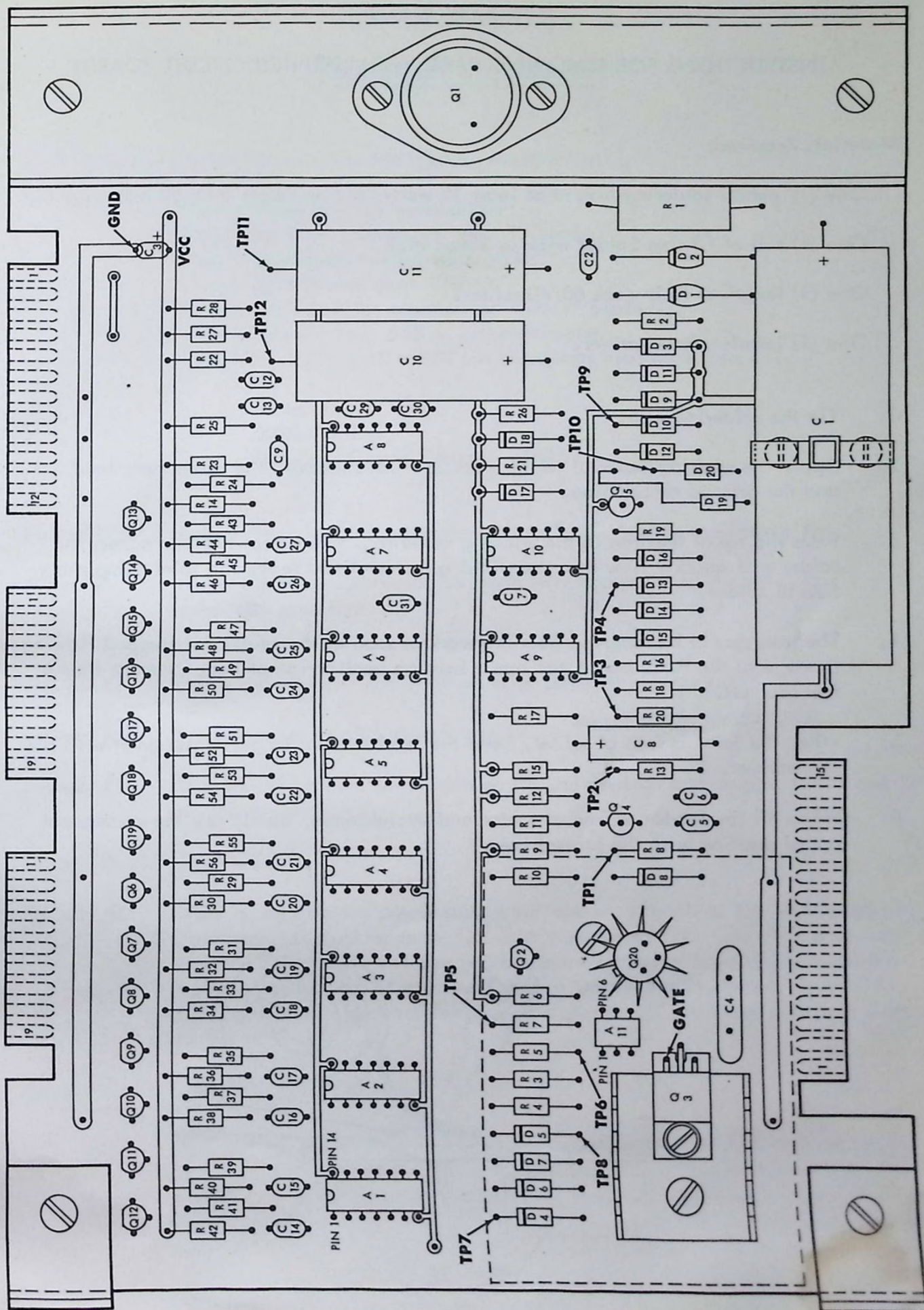
The score lights will not turn off immediately. The game timing circuit composed of R17, C8, Q5 will be used as a score light timing circuit to hold the lights on for some small interval. As the output of A9 Pin 11 goes high at the end of the seventh score, R16 will be added to the game timing circuit in parallel with R17. This will speed up the completion of the game time delay circuit, and when Q5 fires, a pulse will be fed to A9 Pin 5, A8 Pin 4 will go low, and all of the score flip-flops will be set to turn off the score lights.

An anti-fouling circuit is incorporated to prevent free games when the machine is first turned on - on when power is interrupted. When power is first applied or re-applied to the table, Q4 will conduct putting a low at A9 Pin 4. This will cause the output of A8 Pin 4 to go low, resetting the start flip-flop and score lights as at the termination of the game.











## TEST AND REPAIR

### INSTRUCTIONS FOR REMOVING PARTS FROM PRINTED CIRCUIT BOARDS

#### Materials Required:

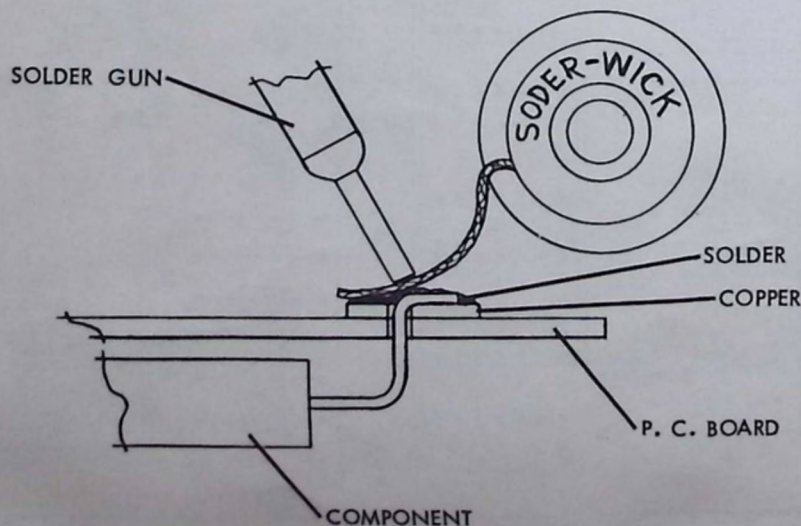
One (1) pencil soldering iron of at least 15 watts, but no larger than 50 watt capacity.

One (1) roll of #3 size Solder wick or Bonus wick.

One (1) length of rosin core 60/40 solder.

One (1) jewelers screwdriver.

1. Tin the soldering iron.
2. Apply the wicking material to the work so it touches both the component lead and the printed circuit line.
3. Press the tip of the iron to the wicking material. When heat transfer occurs the solder will quickly flow into the wicking material and leave the joint completely free of solder.
4. The iron should be removed from the work as soon as the solder has stopped flowing. Damage to the P.C. board can result from an application of heat for more than a few seconds.
5. When the joint is free of solder, bend the lead straight by prying up on it with the screwdriver.
6. When all the leads are free of solder and straightened, gently pry the component out of position with the screwdriver.





## TROUBLESHOOTING

### AIR HOCKEY P.C. BOARD

Tools required for trouble shooting Air Hockey electronics:

- 1 each large Phillips screwdriver
- 1 each standard screwdriver with 6" blade
- 1 each pair small needle-nose pliers
- 1 each 5/16 box or open wrench
- 1 each small Phillips screwdriver with 1" blade
- 1 each Simpson 160, 260 or 270 multimeter
- 1 each HT-2285 or HT-1884 pin extractors available from

Molex Inc.  
5224 Katrine  
Downers Grove, Illinois 60515

Note #1: Before removing any components from P. C. Board, see instructions.

Note #2: All voltage measurements are made from test point to ground unless otherwise specified.

TROUBLE: Table circuits will not activate after depositing money.

Cause #1: Wire or wires to coin switch broken.

Remedy #1: Visually check the wires both on the coin switch and on pins 10-11 and 12 on the A connector.

Cause #2: No VCC.

Remedy #2: VCC is the common power supply voltage used by all of the integrated circuit packages. It must measure 5.5 volts across capacitor C3. If it does not, replace Q1. If the voltage is incorrect after replacing Q1, measure the voltage across D3. It must be 6.8 V or D3 must be replaced. If VCC is still incorrect, check for leakage on capacitors C1-C2 and C3, or a short to the VCC line.

Cause #3: Q4, Q5, A8 or A9 bad.

Remedy #3: The voltage at test point #1 must be -3 and voltage at TP2 must be +4.3. If either voltage varies from this, replace Q4. If this fails to correct the problem, measure the voltage at TP3. It should read about +3.6. If it is 0, replace A8. If it is .7 V to 1.5 V, replace Q5. If the voltage at TP2 is +4.3 and TP3 is +3.6, and the voltage at A9 pin 6 is .8 volts or more, replace A9. If the voltage at A9 pin 6 is 0 to .8 volts and the voltage at TP4 is less than 4.5 volts, replace A8



Cause #4: A10 bad.

Remedy #4: If the voltage at TP4 is 4.5 V or more, and the voltage at TP5 is more than .8 V, replace A10.

TROUBLE: Scoring lights come on but blower does not come on and puck solinoids don't pull in.

Cause #1: Q2 bad

Remedy #1: If the voltage at TP5 is .8 or less, the voltage at TP6 should be about +2. If it is not, replace Q2.

TROUBLE: Scoring lights go out at end of game but blower does not shut off and puck solinoids don't drop out.

Cause #1: Q2 or A10 bad.

Remedy #1: Measure the voltage at TP5 when game is over. If it is less than 4.5, replace A10. If the voltage at TP5 is 4.5 or over, and the voltage at TP6 is more than 0, replace Q2.

TROUBLE: Scoring lights go out and puck solinoids drop out at end of game, but blower does not shut off.

Cause #1: Q3 or A11 bad.

Remedy #1: Shut off power. Unsolder Q3 gate lead from circuit board. Turn on power and start new game. If blower runs, replace Q3. If blower does not run, replace A11.

TROUBLE: All functions normal except blower does not run or runs at slow speed.

Cause #1: Blower, bridge rectifier, Q3, A11, or connectors bad.

Remedy #1: Visually check connector wiring. If okay, measure the voltage from TP7 to TP8. If less than 6 V, replace the bridge rectifier of D4 through D7. If voltage is above 6V, short out pins 4 and 5 of A11. If blower runs normally, replace A11. If blower does not run normally, replace blower. If new blower does not run normally, replace Q3.



TROUBLE: All functions normal, except puck solenoids do not release pucks.

Cause #1: Puck solenoids out of adjustment.

Remedy #1: To adjust solenoid, loosen the two mounting screws. Push plunger back until flush with surface of goal track casting.

Cause #2: Bridge rectifier bad.

Remedy #2: While game is in progress, measure the voltage from TP9 to ground. If less than 18, replace bridge rectifier D9 through D12.

Cause #3: Q20 bad.

Remedy #3: Measure the voltage from TP10 to ground. If it is more than 1 volt, replace Q20.

TROUBLE: At end of game, lights do not go out. Blower doesn't shut off and puck solenoids do not release

Cause #1: A9 bad.

Remedy #1: Check the voltage on pins 8, 10, 12 and 13. The voltage on either 12 or 13 must be 0. The voltage on pin 10 must be at least 5 and the voltage on pin 8 must be 0. If any of the voltages vary from the above, replace A9.

TROUBLE: During the course of play, none of the lights on one side of the table come on or only one light comes on.

Cause #1: B or C connectors off main P.C. board or lamp P.C. board.

Remedy #1: Replace connector.

Cause #2: B or C switches bad.

Remedy #2: Disconnect wires to the puck switch. Connect an ohm meter between the common and no terminals of the switch. If, when operating the switch, the meter does not read from infinity to 0 ohms, replace the switch.

Cause #3: A8 or A10 bad.



Remedy #3: Instructions are given for trouble shooting the B channel only. B and C channel are identical in design and both use A8 and A10. Measure the voltage at A10 pin 10. If the switch is operating properly, it will be 0 volts when the switch is operated. When the voltage at A10 pin 10 is 0, the voltage at A10 pin 8 must be 5. If it is not, replace A10. If the voltage at A10 pin 8 is 5, then the voltage at TP11 must be 0 when the switch is operated. If it is not, replace A8.

TROUBLE: One light on one side does not light.

Cause #1: Light bulb burnt out.

Remedy #1: Exchange connectors B and C. If the light in question does not come on, change the bulb. If it does come on, check the pins in the connectors for both P.C. boards. If the connectors are okay, the trouble is in the control P.C. board. As the circuitry for all 14 lights is the same, except for pin numbers on the integrated circuit packages, an example for one circuit will be given.

If the sixth lamp on the "B" P.C. board were out and the "B" puck switch has been operated more than 6 times, the proper procedure would be to first measure the voltage on pin 6 of A7. It should be near 0. If it were not, A7 should be replaced. If it were and the voltage at "B" connector pin 8 was less than 5 volts, Q18 should be replaced.



## **SERVICE PARTS**

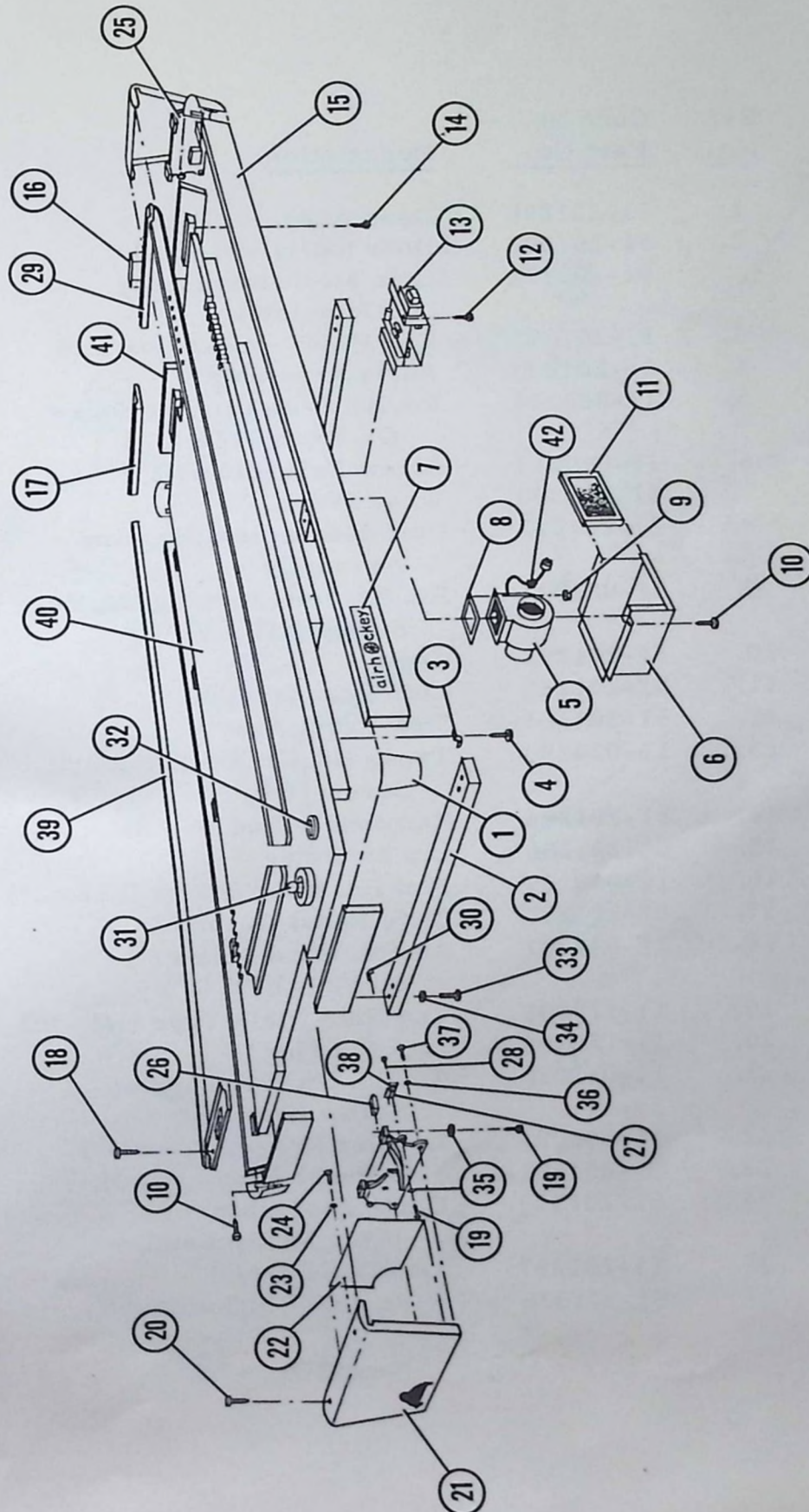


SERVICE PARTS  
AIR HOCKEY - BED - APRON ASSY.

Ref. No.	Code No. - Part No.	Description	Ref. No.	Code No. - Part No.	Description
1.	51-201265	Apron Corner Assy.	21.	51-201324	Cover Casting
2.	51-201262	Cleat Bed Support	22.	51-201308	Cover Backing
3.	11-605502	Wire Clamp	23.	123-56-050	Plain Washer (#6)
4.	11-082034	#6 - 3/4 Lg. Rd. Hd. Cr. Rec. Tapping Screw Type A-B	24.	11-012272	Pan Hd. Machine Screw (#6 - 32 x 3/8")
5.	51-201288	Centrifugal Blower	25.	51-201315	Goal Track Casting
6.	51-201280	Blower Fan Housing	26.	51-201318	Solenoid & Spring Assy.
7.	51-201345	Decal (Air Hockey)	27.	51-201317	Switch Mounting Plate
8.	51-201309	Gasket Seal	28.	11-086602	Pan Hd. Self-Tap Screw (#8 - 32 x 3/8")
9.	123-56-100	Self-Locking Nut (1/4 - 20)	29.	51-201267-3	End Rail - L. H.
10.	11-082092	Rd. Hd. Self-Tapping Cr. Rec. Screw (#10 x 3/8")	30.	53-200578	Stamped Nut
11.	51-201289	Dust Filter	31.	51-862336	Goalee (Pkg. of 2)
12.	11-082598	Screw Pan Hd. Cr. Type A-B (#14 x 3/4")	32.	51-862339	Puck (Pkg. of 25)
13.	51-201303	Support Assy. (Transformer & P. C. Board)	33.	11-001125	Hex Hd. Screw (#10 - 32 x 5-1/4")
14.	11-082605	Pan Hd. Self-Tapping Screw (#14 x 2")	34.	928-32-970	Plain Washer (5/16")
15.	51-201263	Side Apron Assy.	35.	123-53-130	Plain Washer (#10)
16.	51-201349	Caution Decal	36.	123-56-820	Plain Washer (#8)
17.	51-201267-2	End Rail - R. H.	37.	11-017125	Rd. Hd. Screw w/Ext. Tooth Lockwasher Assy. Cr. Rec. (8 - 32 x 5/8")
18.	928-31-790	Truss Hd. Screw (#14 x 1-1/4")			Switch Assy.
19.	11-082096	Rd. Hd. Self-Tap Screw (#10 x 1")	38.	51-201316	Side Rail
			39.	51-201266	Bed & Frame Assy.
			40.	51-201252	End Apron Assy.
20.	11-024291	Truss Hd. Screw Gr. Rec. (1/4 - 20 x 1")	41.	51-201264	Grommet (15/16" O. D.)
			42.	11-651016	



SERVICE PARTS  
AIR HOCKEY - BED - APRON ASSY.



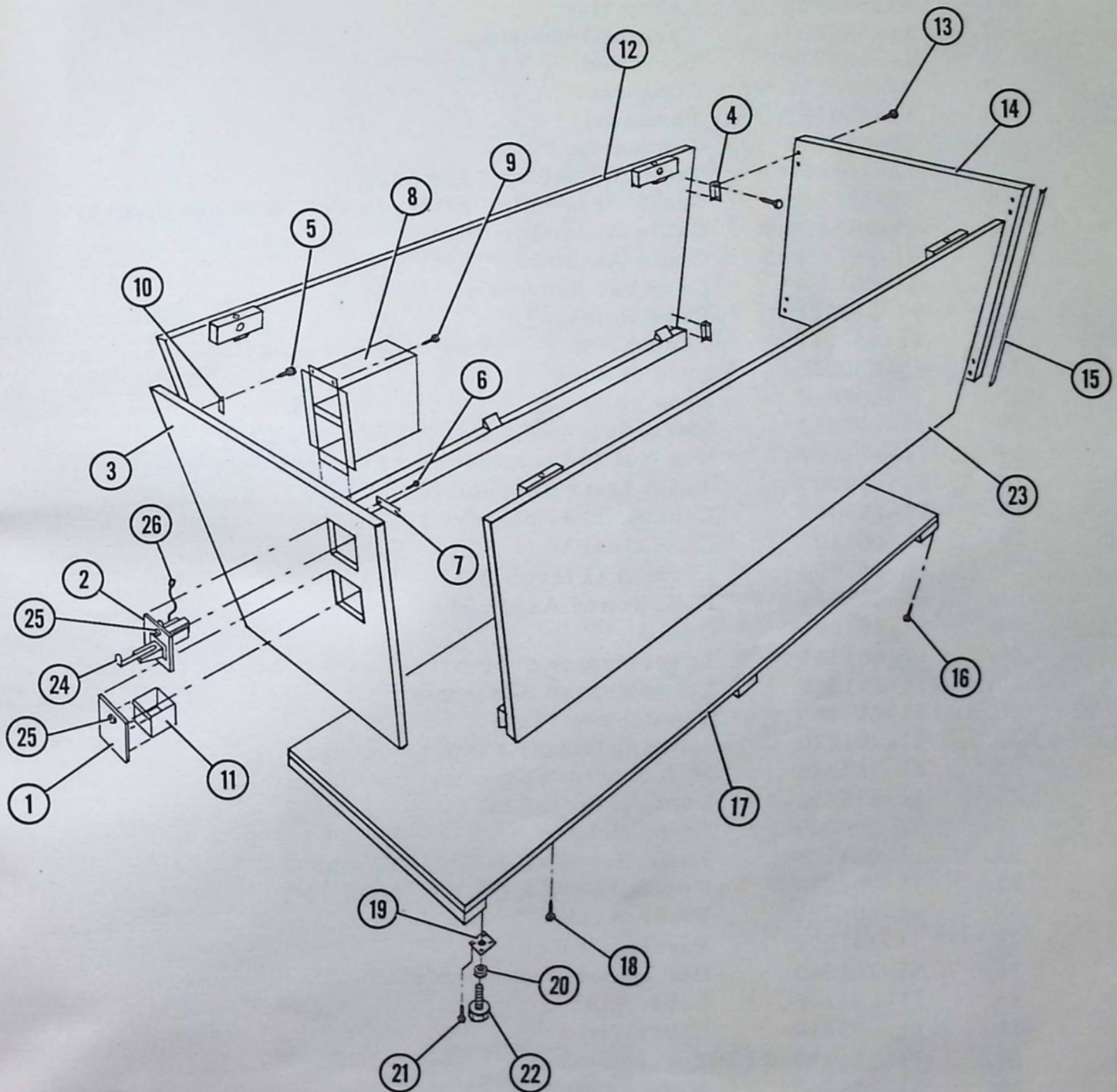


SERVICE PARTS  
AIR HOCKEY - BASE ASSY.

<u>Ref.</u> <u>No.</u>	<u>Code No. -</u> <u>Part No.</u>	<u>Description</u>
1.	51-201298	Door Assy. w/Lock
2.	51-201302	Door (only) w/o Lock
	51-201301	Coin Mechanism Assy. (Complete)
3.	51-201295	End Panel - Coin Box End
4.	51-201293	Angle Assembly
5.	11-082124	Rd. Hd. Self-Tapping Screw Cr. Rec. (#12 x 3/4")
6.	11-090013	Screw Nail (#16 x 1/2")
7.	51-201300	Wear Plate
8.	51-201273	Coin Mechanism Housing Assembly
9.	11-082092	Rd. Hd. Self-Tapping Cr. Rec. Screw (#10 x 3/8")
10.	51-201292	Angle
11.	51-201285	Coin Box Assembly
12.	51-201291-2	Side Panel Assy. - L. H.
13.	11-024293	Truss Hd. Cr. Rec. Machine Screw (1/4 - 20 x 1-1/4")
14.	51-201294	Removable End Panel
15.	51-201296	Lip Moulding
16.	11-040129	Flat Hd. Wood Screw (#12 x 2")
17.	51-201290	Base Panel Assembly
18.	11-042587	Rd. Hd. Wood Screw (#12 x 1-1/4")
19.	11-178001	Tee Nut - Plate Type (1/2 - 13)
20.	11-125208	Jam Nut (1/2")
21.	11-082036	Rd. Hd. Cr. Rec. Tapping Screw (#6 x 1")
22.	11-696003	Leveler (1/2 - 13 x 3-5/16")
23.	51-201291-3	Side Panel Assy. - R. H.
24.	51-201299	Chute Assembly (Coin Mechanism)
25.	51-201297	Lock (w/2 Keys)
26.	51-201338	Wire Assy. - Coin Switch



SERVICE PARTS  
AIR HOCKEY - BASE ASSY.



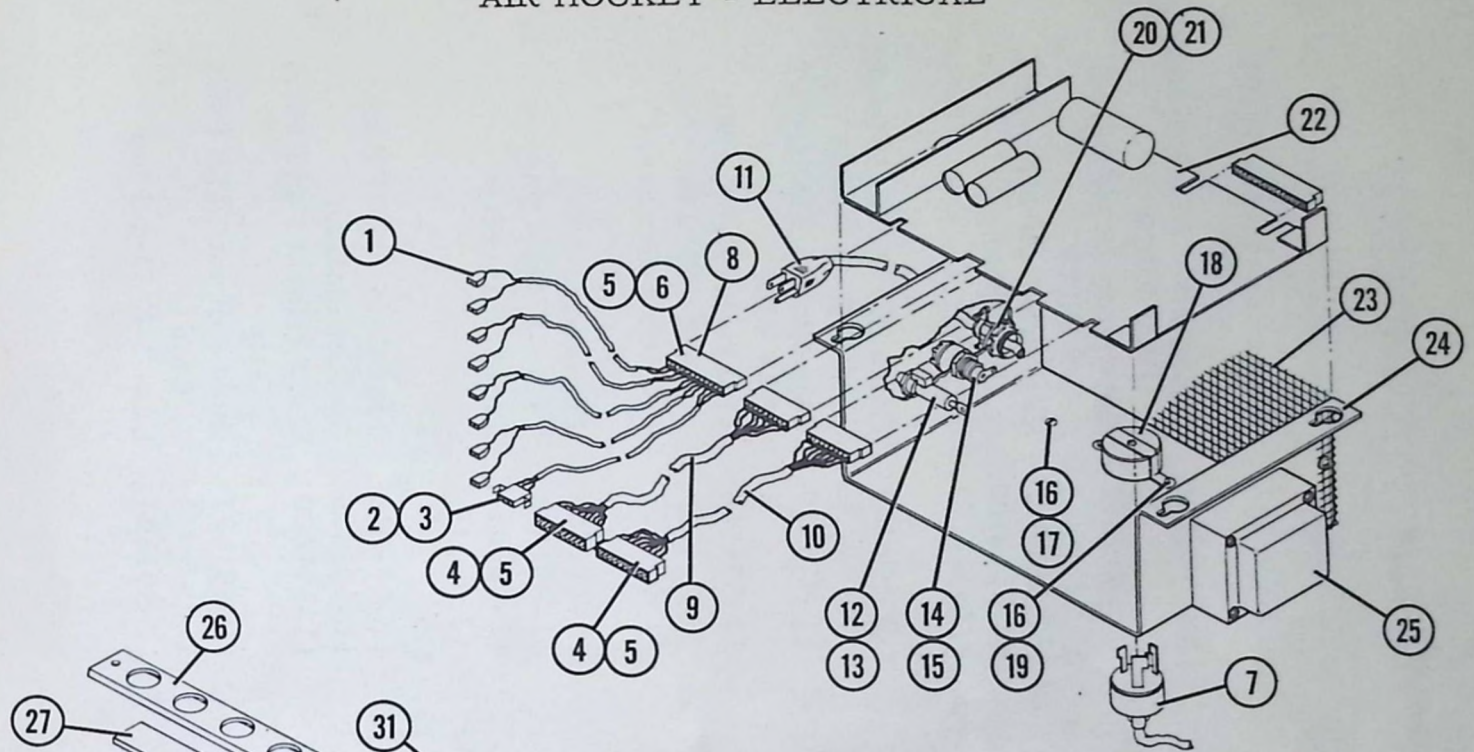


SERVICE PARTS  
AIR HOCKEY - ELECTRICAL

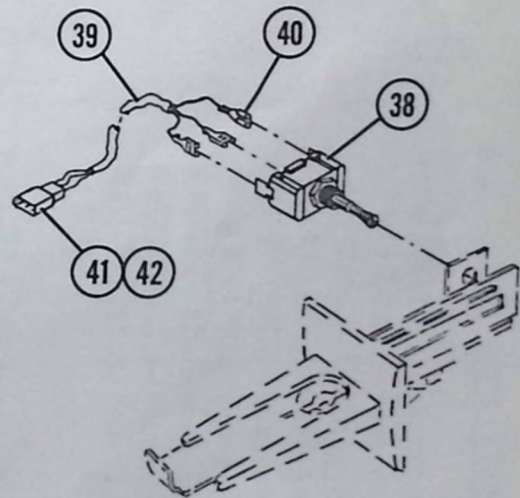
<u>Ref.</u> <u>No.</u>	<u>Code No. -</u> <u>Part No.</u>	<u>Description</u>
1.	11-612252	Receptacle
2.	11-680203	Terminal Housing
3.	11-680301	Terminal
4.	11-680257	Connector
5.	11-680303	Terminal
6.	11-680258	Connector
7.	123-56-490	Twist Lock Cap - Hubbel
8.	51-201342	Cable Assembly "A" (Coin, Sol. & Score Switch)
9.	51-201339-2	Cable Assembly "B"
10.	51-201339-3	Cable Assembly "C"
11.	51-201334	Cord Set Assembly
12.	11-685101	Fuse Holder
13.	11-685011	Fuse (C-5)
14.	53-600056	Fuse Holder
15.	11-685018	Fuse (Pkg. of 5)
16.	11-107062	Mach. Screw-Rd. Hd. Sl. (#8 x 32 x 1/4")
17.	11-176007	Hex Nut & Lockwasher Assy. (#8 - 32)
18.	11-679303	Twist Lock Receptacle
19.	11-199002	Lockwasher-Internal Tooth (#8)
20.	11-602101	Cord Grip
21.	11-602002	Locknut (Electrical)
22.	51-862344	P. C. Board Assembly
23.	51-201304	Guard
24.	51-201305	Transformer Support
25.	51-201326	Transformer Assembly
26.	51-201269	Escutcheon Plate
27.	51-201270	Score Indicator Plate
28.	51-862343	P. C. Board (w/Lamps)
29.	11-675512-2	Lamp (Pkg. of 10)
30.	53-200039	Lamp Holder
31.	11-024125	Mach. Screw-T. Hd. (8 - 32 x 3/8")
32.	11-082034	Rec. Screw-Rd. Hd. Cr. (#6 x 3/4")
33.	51-201271	Fiber Washer
34.	51-201272	Spacer - Fiber
35.	51-201340	Bed Harness Assembly
36.	11-603108	Cable Tie
37.	11-603110	Cable Tie
38.	51-201299-2	Toggle Switch
39.	51-201338	Wire Assembly
40.	11-612253	Terminal
41.	11-680101	Terminal Housing
42.	11-680302	Terminal



# SERVICE PARTS AIR HOCKEY - ELECTRICAL

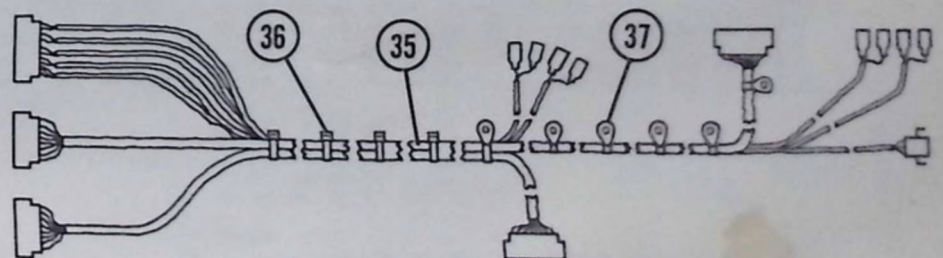


CONTROL BOX



COIN SWITCH ASSEMBLY

SCORE  
INDICATOR



MAIN WIRING HARNESS

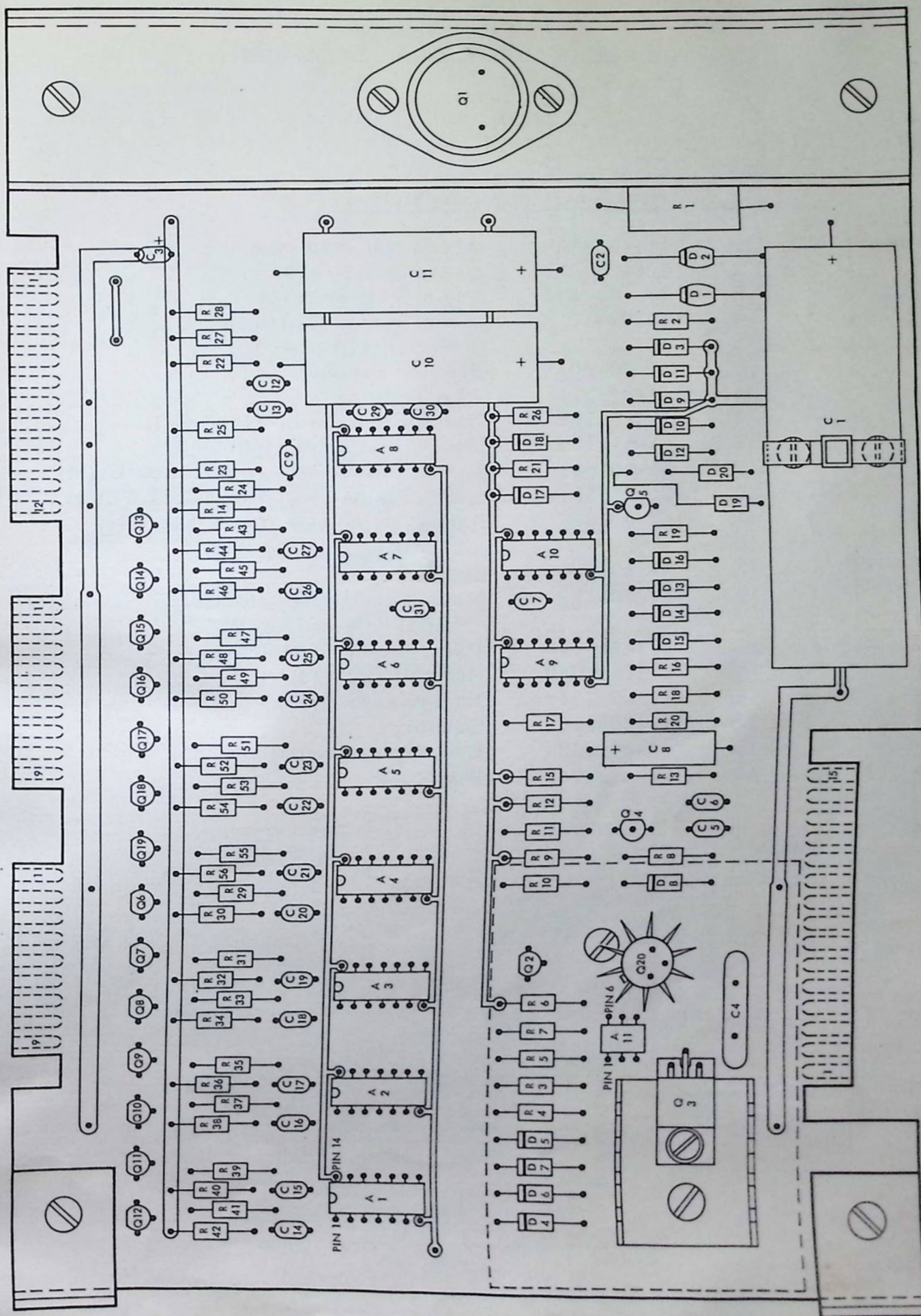


# SERVICE PARTS AIR HOCKEY - P. C. BOARD

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R21, 23, 26	11-691049	Resistor-6.8K+5% 1/4W	C5	11-696312	Capacitor-3.3 MFD+10% 15 VDCW
R19	11-691037	Resistor-1 MEG+10% 1/4W	C4	11-696032	Capacitor-.01 MFD+20% 1000 VDCW
R17	11-691166	Resistor-3.9 MEG+5% 1/4W	C3, 6, 9	11-696313	Capacitor-22 MFD+10% 15 VDCW
R16	11-691134	Resistor-150K+5% 1/4W	C2, 7, 12, 13, 11-696031	Capacitor-.10 MFD+20% 16 VDCW	
R13	11-691167	Resistor-47K+10% 1/4W	C14, 15, 16, 17, 18, 19, 20,		
R12	11-691051	Resistor-10K+5% 1/4W	C21, 22, 23, 24, 25, 26, 27,		
R11, 24	11-691090	Resistor-18Ω +5% 1/4W	C29, 30		
R9, 10, 15, 20,	11-691101	Resistor-4.7K+5% 1/4W	C1	11-696129	Capacitor-5000 MFD-10% +150% 15 VDCW
R8, 14, 27, 28,	11-691086	Resistor-2.2K+5% 1/4W	C31	11-696310	Capacitor-6.8 MFD+20% 25 VDC
R30, 32, 34, 36, 38, 40, 42,			Q20	11-691526	Transistor-NPN PWR RCA #2N5296
R44, 46, 48, 50, 52, 54, 56			Q5	11-691523	Transistor-Program Unijunction
R4, 6, 7, 18,	11-691119	Resistor-680Ω +5% 1/4W	Q4	11-691506	Transistor-NPN
R22, 25, 29, 31, 33, 35, 37,			Q3	11-691524	Triac-8 AMP Silicon
R39, 41, 43, 45, 47, 49, 51,			Q2, 6, 7, 8,	11-688040	Transistor-PNP
R53, 55			Q9, 10, 11, 12, 13, 14, 15		
R3, 5	11-691077	Resistor-68Ω +5% 1/2W	Q16, 17, 18, 19		
R2	11-691168	Resistor-390Ω +5% 1/4W	Q1	11-691522	Transistor-NPN PWR
R1	11-692506	Resistor-PWR-.47Ω +10% 5W	A11	11-698526	Optical Isolator
D20	11-693038	Diode-Zener	A9-10	11-691600	Quad 2-Input Nand PWR Gate
D13, 14, 16,	11-693051	Diode	A8	11-691603	Quad 2-Input Nand PWR Gate
D17, 18			A1 thru 7	11-691604	Dual J-K Flip-Flop
D9, 10, 11,	11-693004	Diode-Rectifier			
D12, 19					
D4, 5, 6, 7,	11-693009	Diode			
D8, 15					
D3	11-693040	Diode-Zener			
D1, 2	11-693204	Diode-Rectifier			
C10, 11	11-696130	Capacitor-1000 MFD 10 VDCW			
C8	11-696351	Capacitor-120 MFD+10% 10 VDCW			



# SERVICE PARTS AIR HOCKEY - P. C. BOARD



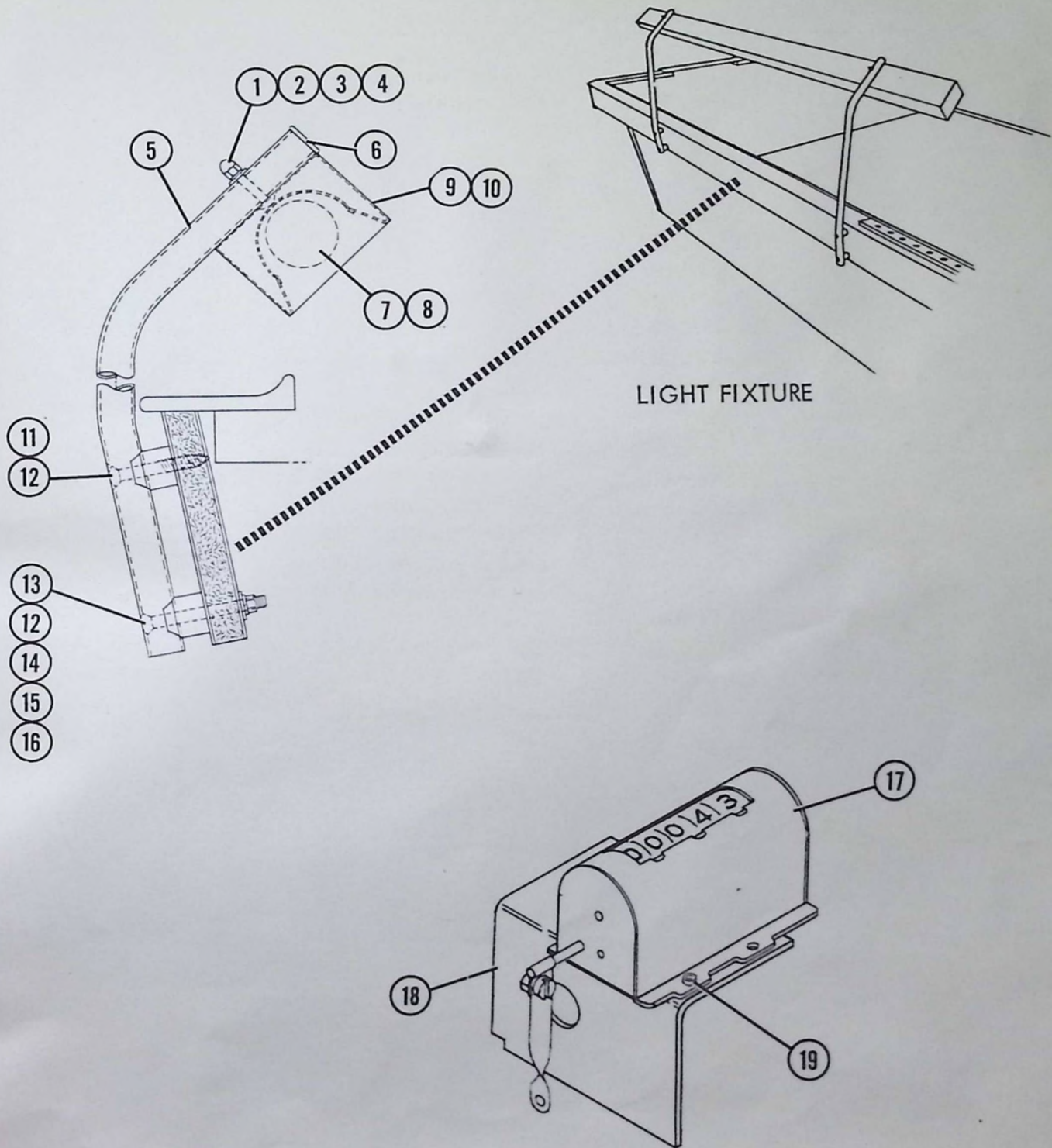


SERVICE PARTS  
AIR HOCKEY - OPTIONAL EQUIPMENT

<u>Ref.</u> <u>No.</u>	<u>Code No. -</u> <u>Part No.</u>	<u>Description</u>
1.	11-125412	Acorn Nut (#10 - 24)
2.	928-24-170	Lockwasher (#10)
3.	123-53-130	Plain Washer (#10)
4.	11-024171	Mach. Screw-Truss Hd. Cr. Rec. (#10 - 24 x 1")
5.	51-201503	Fixture Support
6.	11-253011	Plug Button
7.	11-675103	Black Light Lamp (40W-48")
8.	11-675104	Cool White Lamp (40W-48")
9.	51-201501-3	Light Fixture w/Lamp (Black Light)
10.	51-201501-2	Light Fixture w/Lamp (Cool White)
11.	11-083876	Screw-Type A-B, Oval Hd. Phillips (1/4 - 14 x 2")
12.	51-201504	Spacer
13.	11-026299	Mach. Screw-Oval Hd. Cr. Rec. (1/4 - 20 x 2-1/2")
14.	123-56-790	Plain Washer (1/4")
15.	123-55-080	Hex Nut (1/4 - 20)
16.	123-52-710	Lockwasher (1/4")
17.	51-200213	Counter
18.	51-201323	Counter Support
19.	11-293504	Pop Rivet



SERVICE PARTS  
AIR HOCKEY - OPTIONAL EQUIPMENT



GAME COUNTER













*Brunswick*  
CORPORATION



## STANDARD PACKAGING

- 51-82333-0, -3 (1) Set Miscellaneous Air Hockey Table Parts,  
Playing Equipment, Manual & Hardware
- (2) 51-201305 Goal Cover & Backing Assembly
- (2) 51-201314 Goal Track Assembly
- (1) 51-201280 Blower Fan Housing
- (1) 51-201531 Centrifugal Blower - 115V 50/60 HZ
- (1) 51-201273 Coin Mechanism Housing
- (1) 51-862338-0 Pkg. (1) Door Coin Mechanism - USA GREENWALD
- (OR) 51-862338-100 Pkg. (1) Door Coin Mechanism - USA A.B.T.
- ~~(OR) 51-862338-3 Pkg. (1) Door Coin Mechanism - CANADA GREENWALD~~
- ~~(OR) 51-862338-100 Pkg. (1) Door Coin Mechanism - CANADA A.B.T.~~
- (1) 51-862337 Pkg. (3) Air Hockey Pucks
- (1) 51-201285 Coin Box
- (1) 51-862334 Pkg. (1) Set Installation Hardware
- (1) 51-862334-1 Hardware, Bed & Base to Side & End Panels
- (4) 11-001275-1 Hex Hd. Scr. 5/16-18x2-3/4
- (4) 11-190012-1 Pl. Washer 5/16
- (8) 53-200578 Stamped Nut
- (10) 11-040129-1 Screw, Fl.Hd.C.R. Wood #12x2
- (8) 11-042587-1 Screw, Rd.Hd.C.R. Wood #12x1 1/4
- (8) 11-024293-1 Screw, Truss Hd.C.R. 1/4-20x1 1/4
- (2) 11-071004-9 Carriage Bolt #10-24x1 1/4
- (8) 11-125004-1 Hex Nut #10-24
- (8) 11-195010-1 Lockwasher #10
- (1) 51-862334-2 Hardware, Blower & Coin Mechanism
- (4) 11-170007-1 Self Lock Nut
- (3) 11-082092-1 Screw, Rd.Hd. C.R. Type AB #10x1/2
- (1) 11-651016 Grommet
- (1) 11-651011 Grommet
- (1) 51-862334-3 Hardware - Goal Cover & Backing
- (4) 11-024651-1 Screw, Truss Hd.C.R. 1/4-20x1"
- (8) 11-082096-1 Screw, Rd.Hd.C.R. Type AB #10x1"
- (8) 11-190006-1 Pl. Washer #10
- (4) 11-026601-1 Screw, Fl.Hd.C.R. Type "E" #8-32x1 1/4
- (4) 11-131607-1 1/4-20 Flg. Nut with lock
- (4) 11-024293-1 1/4-20 truss hd. cr. rec. mach. screw
- (1) 51-862334-4 Hardware - Foot Leveler & Jam Nut
- (4) 11-696003 Leveler
- (4) 11-125208-1 Jam Nut 1/2-13
- (1) 51-862334-5 Gasket Seal
- (6) 51-201508 Abrasive Paper Sheet
- (1) 51-201220 Dust Filter
- (1) 51-862334-1 Installation & Service Manual
- (1) 51-862334-1 Pkg. of 1000 Plastic Chips (High Grade)
- (1) 51-862334-1 Door, Coin Box
- (1) 51-862334-2 Pkg. (1) Door Air Hockey Goalie

[illegible]

7 POINT SCORE